Integrated musical perspectives
How matter becomes art music. Portfolio of compositions and technical commentary

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Portfolio of compositions and technical commentary

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Abstract

This thesis accompanies the folio of the acoustic and electroacoustic compositions of the portfolio, which consists of a work for soli, choirs and orchestra, an orchestral piece, a solo for oboe, four ensemble chamber composition and a string quartet with sound projection and live electronics.

The works exhibit a variety of cross-disciplinary approaches from theatrical, live electronics, networked performance, and narrative and multichannel/sound projection.

The main concerns spanning the portfolio are the connections navigated through a 'synthesis' of multiple disciplines within the language of acoustic and electroacoustic music, and challenging areas of research that question and raise new musical possibilities. In all these works the morphological handling of music matter is always intertwined with issues of formal construction.

For each composition I described applied studio techniques, sound sources, transformations and formal elements. As compositional tools, special software have been used, explored and developed in contrasting programming languages. These programs are briefly introduced, showing their links to compositional processes. The commentary presents supplementary information on each work, with a view to providing the reader with insights into the evolution of my compositional vocabulary.

A particular attention has been devoted to the pre compositional and perceptual spatial aspects of my work, with reference to theoretical writings and research in the field.

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More than everybody, I bound to the only immense love of my life: Metka Sumandl for all her support throughout these years and her continuous work, correcting my writings, scores and emails, calming my outbursts and depressions, listening to my visions late at night and running with me during cold early mornings in the London mist.

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2 – *De Materia Nigra et Obscura* (2013) commissioned by Ernest Von Siemens, World Premiere 7th July 2013, Kings Place London, UK. Performed by Klangforum Wien.

3 – *Mens Agitat Molem* (2013) World Premiere 8th August 2013, Grafenegg, A. Performed by Tonkustler Orchestra, conductor R. D. Rusconi.

4 – *De Materia Subtilis et Complexa* (2012-2013) commissioned by Pro Helvetia, World Premiere 15th March 2014, Geneva, CH. Performed by Ensemble Contrechamps.

Preface

The compositions in this portfolio behave like living organisms with their own bio-morphological cycle lasting the life span of a musical work. My research aims at developing new compositional possibilities inspired by the new discoveries of 'hard' and 'soft' sciences, introducing new approaches to traditional methodologies and possibly sustaining a creative interdisciplinary confrontation between the objective analytical world and the subjective creative act. All these musical creations accept a radical functional differentiation and redefinition; every work aspires to nudge a paradigm shift and to free music from a paralysis originated in the 'ossified and lifeless' binary opposition of the First Modernity.

De Imago (Materia) Sonora (for string quartet, sound projection and live electronics) belongs to the De Materia cycle and has an inbuilt difference being constantly subjected to different processes of growth and disintegration, and by necessity dependent on it. My research for a 'new' kind of sound projection has led me towards the creation of an algorithm capable of projecting different portion of the same sound spectrum along diverse spatial and temporal trajectories. In this work I have attempted to shape the physical and perceptive space of the listener, working with selected pitches and series of sub and upper harmonics. The live electronics are conceived as a fifth performer and constantly interact with the string quartet creating a 'meta-instrument'.

Veni Creator Spiritus (for soli, choir, children choir and orchestra) is the most ambitious work in this portfolio and the only one still awaiting its premiere. The work originates from the paraphrase of the hymn of Rabano Mauro, and was written for the 2013 contest in celebration of the Constantine Edict of Milan issued in 313. Here I wish to emphasize and elucidate the notion of 'interiority' attempting to define it, and to underline a desperate need of spirituality I feel very present in our time. In this essentially religious work I have tried to propose the most powerful musical representation of the message in the original hymn, and to contribute to the open debate on the relevancy of spatial thinking, considering it a constant in my perceptual and creative world.

De Materia Solida et Corporea (for flute, clarinet, oboe, bassoon, violin, viola, cello and double bass) is a triptych within the De Materia cycle. The work is inspired by *De Rerum Natura* by Lucretius and shares with the Latin poet the same intent of analysing the elements of nature, in my case of music. Everything finally comes together in the consciousness that nothing really changes, always transforms itself, and the matter of music always remains the same even if presenting itself in infinitely different ways.

De Materia Nigra et Obscura (for piano quintet), dedicated to the discovery of the Higgs' boson, explodes sections of 'music matter' carved out of a single spectrum along different directions creating melodies, rhythmic patterns and textural waves. Every constituent develops and finally returns to the initial single spectrum, symbolising the hydrogen isotope used in the LHD Experiment in Geneva.

The work investigates poetically and technically a new morphology, transforming musical matter into an always-transforming continuum while progressing towards an ideal freedom obtained via its dissolution and symbolic return to the original state.

Mens Agitat Molem (for chamber orchestra) inspired by verses of Virgil (Virgil, Aeneid, VI, 727), explores the possibility of an organic metamorphosis of every single parameter, obtained with a subtle gradual transformations of the micro-acoustic musical components and their interaction and transformation in space and time. Every note is transformed in a polyphonic counterpoint of timbres and dynamics, all with different values of tensions and release. The work attempts to re-define the relationship between all these elements, while trying to elevate their cohabitation to one of its central principles.

Anankè (for flute, clarinet, percussion, violin, cello and piano) is a sort of shamanic evocation where the percussion has the role of an oracle investing the other performers of taking music from birth to life. From the initial invocation to the abrupt conclusion the work represents an event in which the manifestation of the musical matter is the reconstruction and celebration of a rite in which the artistic and human circle of birth, growth and death is represented.

De Materia Subtilis et Complexa (wind quintet and piano) attempts to create, for the listener, an almost surreal suspension of time. The title comes from the musical movement of the renaissance called Ars Subtilior (or late Ars Nova)[1] and had me

[1] Musicologist Ursula Günther was the first, in 1950, to use the term "ars subtilior" to refer that complex musical style, which is the term widely used by musicologists today.

reflecting that in a performance everything is constantly changing from the beginning to the end: musical matter, the meaning of the performers and the emotion of the listeners. In this work I stress that artistic identity is defined by a multi-dimensional concept of structure which allows a dialogue between the composer, the performers and the musical matter.

In *Salmodia* (for solo oboe) the melody expresses pain and despair recalling Jeremiah's *Book of Lamentations* and the Kinòth (elegy of mourning)[2]. My intention was to compose an instrumental chant that slowly emerges into the consciousness and memory of the listener through a selective and interpretative progressive process. Firstly I introduce a single note, presented as a single musical event, with small microtonal variations and differences in attack and dynamic, only after I compose melodic and rhythmic fragmentations to intensify the framework. During the whole work the phrasing challenges the skills of the performer while new techniques for multiphonics are carefully selected and explored.

The works in this portfolio represent an attempt to develop an innovative approach to composition according to principles suggested by recent developments in phenomenology, musical morphology, biological approaches to memory and consciousness, embodied music cognition, but above all by the writings of Gerald M. Edelman and Giulio Tononi[3], in particular their reflections on consciousness, matter, and art as intentional object.

[2] Kinnot (Hebrew: קינות; also kinnos, kinoth, qinot, qinoth; singular kinah or qinah) are dirges (sad poems) or elegies traditionally recited by Jews on Tisha B'Av to mourn the destruction of both the First and Second Temple in Jerusalem and other tragedies in Jewish history, including the Crusades and the Holocaust.
[3] A Universe of Consciousness. How Matter becomes Imagination G.M. Edelman & G. Tononi; Basic Books, New York, 2000.

Drawing from the conception of a 'second age of modernity' as a ‘magical password that is meant to open the doors to new conceptual landscapes’[4], I have endeavoured to achieve an integration of principles informed by the above mentioned fields to the creation of music. The compositions in this portfolio are ‘fields’ rather than ‘objects’ arising from, the process of musical writing and its perception.

My striving towards embodied, experiential meanings is informed by 'phenomenology' and the study of 'perception' to provide a fresh, complex, rich description of phenomena as they are actually experienced. As Wertz (2005, p.175) puts it:

> Phenomenology is a low-hovering, in-dwelling, meditative philosophy that glories in the concreteness of person-world relations and accords lived experience, with all its indeterminacy and ambiguity, primacy over the known.

It is my strong conviction that we ought to rely on phenomenological-inspired research methods that are responsive not only to both the phenomena and the interconnection between the composer and the musical matter, but also to the performer, the audience as well as the perceptive field itself (space and time ‘in primis’).

From an initial focus on subjective and practical necessities, and the historical conditions of my compositional practice, I gradually became curious about how conscious, and subconscious experience, together with musical mental representation, seem to be grounded in brain activity. From a phenomenological perspective, sounds may be classified according to their perceptual characteristics. One of my first pre-compositional acts involves classifying sounds according to their evocative potential. The phenomenological approach thus places the detailed description of perceptions (and

[4] The cosmopolitan perspective: sociology of the second age of modernity. Ulrich Beck; British Journal of Sociology Vol. No. 51 Issue No. 1 (January/March 2000) pp. 79–105 © London School of Economics 2000.

of all conscious experiences) before everything. The intent to locate meaning and even structure in the listener, rather than in scores, performances, or composers is what Jonathan Kramer lists as one of the characteristics of 'postmodern' music[5].

During the pre-compositional stage, the classification itself often is redefined, and may even remain undefined or in flux after the actual experience of collecting aural data and listening (either in a real or virtual perceptive landscape) has commenced. In order to create a virtual perceptive landscape, I use physical models, software for audio analysis and sequencers. These synthetic tools enable me to play to 'guest listeners', single components, extracts and even complete works followed by questioning the participants and analysis of the data.

To compensate for the fact that we still lack a well-founded phenomenology of sound, I have drawn on recent works and contributions on musical morphology[6], in particular I am interested in the idea that music generally results in certain 'shapes' and that compositional activity can be understood as a 'shaping' of the 'matter' of music. In the last two decades composers and music theorists have increasingly tended to deconstruct and redefine 'musical fabric', 'sonic material' and 'art work'.

De-constructive strategies gain from taking into consideration structures that inflect tension and repose with poetical intention. Bringing together considerations arising from phenomenology of perception and morphology of material has allowed me to obtain both homogeneity and a personal redefinition of components facilitating my work on musical fabric and thus bypassing distractions about style or stylistic implications.

[5] J.D.Kramer, Postmodern Concepts of Musical Time, Indiana Theory Review 17(1997).
[6] Claus-Steffen Mahnkopf, Frank Cox, and Wolfram Schurig (eds.) *Musical Morpholoy* New Music and Aesthetics in the 21st Century, Vol. 2, Gesellschaft für Musik & Ästhetik and the bludenzer tagen zeitgemäßer music 2009.

Robert Snyder's *Music and Memory*[7] opened up a whole new universe to me, in the sense that in the past three years I have focused intensively on three levels of musical experience: a) event fusion (the formation of single musical events from acoustical vibrations in the air, on a timescale too small to exhibit rhythm), b) pitch and pattern, and c) structure or framework. The latter category deals with the psychological conditions necessary for making large-scale—that is, formal—boundaries clear in music, emerging from conditions and necessities inherent in the musical matter and the apparatus that translates it into emotions. I share the view that emotion is a memory enhancer and that musical memory is strongly related to 'attractiveness'. Music contributes to our autobiographical memories[8] and, even when we listen passively, activates emotion, memory, attention, and imagery located in our brain's network.

The works in this portfolio are to some extent an attempt to verify whether the memory-enhancing effect of emotional music can be used to predict, create, attend, disregard and manipulate precise recognitions and moods:

> 'Music automatically awakes us, arouses us and engenders specific emotions in us, which in turn modulates and controls many cognitive functions contributing to create our consciousness'[9].

Finally I share the view of Keller and Janata that 'most musical interactions are socially charged and concertgoers, music lovers or general audiences understand music in the same way that they understand others' intentions in social interactions generally. Expressive intentions are attributed to music because 'patterns of sonic energy evoke

[7] Music and Memory, Robert Snyder, 2001 MIT.
[8] Eschrich S, Münte TF, Altenmüller EO: Unforgettable film music: the role of emotion in episodic long-term memory for music. BMC Neuroscience 2008.
[9] Lutz Jäncke: Music, memory and emotion. Journal of Biology2008, 7:21.

bodily gestures that are meaningful to an individual due to his or her personal history as an active participant within a cultural environment'[10].

Why does the terminology for describing music borrow from the vocabulary for physical attitudes (such as 'walking bass', 'swinging', and even why are notes 'high' or low')? What would happen should one contradict or confirm such sensual or gestural connotations? For example, given that according to recent studies low, loud sounds evoke visceral responses that are intensely pleasurable[11]; I set to explore whether it would be possible to create equivalent reactions with sub-harmonic and infrasound[12].

In the works in this portfolio 'traditional' musical categories (such as intensity, timbre, pitch, movement, and pulse) are taken as the basic of listening, but always with regard to their integration with broader aspects of music production. What has moved me during these years is my conviction that, if we do wish to venture into new realms of music expressions we need to challenge the listeners' habits.

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[10] Peter Keller and Petr Janata, Music Perception, Volume 26. Issue 3.
[11] Tood N.P, & Cody. F.W. (2000) Vestibular responses to loud dance music: A physiological basis of the "rock and roll threshold". Journal of the Acoustical Society of America, 107,496-500.
[12] Infrasound, sometimes referred to as low-frequency sound, is sound that is lower in frequency than 20 Hz or cycles per second, the "normal" limit of human hearing.

Introduction

In the following works I acknowledge the influence of many composers along the centuries; they are part of my formation and my origin as Venetian or have been discovered thanks to the suggestions and advice of my mentors.

A composer who influenced me deeply is Luigi Nono and the sheer musical variety of his achievement, and especially the pieces he wrote and conceived in the 15 years or so before his death in 1990 (what I refer as the 'second modernity'). Few composers have wanted their music to say, to mean, to be about something more than Nono did, and few have understood as keenly as he that every musical decision a composer makes also has social and political ramifications. Nono's real legacy has left in me the urge to draw attention to the act of listening itself as a space to 'sound out' ourselves and our relationship with the world, something that's not only aesthetic but social, ethical and spiritual. I have been really shaken by his music of shimmering spaces, disturbed silences, sharp-edged fragments and dream-like unpredictability, his very last work, *Hay que caminar Soñando* for two violins (which Irvine Arditti and David Alberman premiered in 1989).

I see it is music in which you participate almost as much as the performers, acting out your own dream-journey of moving through a landscape that is at once still and violent. It's one of a handful of pieces that Nono wrote at the end of his life inspired by a motto he discovered on the walls of a monastery in Toledo in Spain: *Caminante no hay caminos hay que caminar*, one of the great aphorisms that can be translated as 'traveller, there is no way to travel, only the travelling'. It's a motto that encapsulates the search through unmarked musical territories on which Nono's late music embarks –

and symbolises how far he and his music had come from any sense of artistic or cultural certainty. Nono isn't telling us how to listen, only offering a soundscape for our ears to navigate along with the progress in the two violinists.

It was the music that Nono wrote from the mid-70s that marked a different world of sonic exploration, often involving electronics, and new kinds of very slow or even static time, and silence. My scholarships and fellowships at Experimentalstudio des SWR, where Nono realized all his late electronic works, allowed me to fully understand, challenge, and take to the next stage sound projection and the idea the concert must be a unique ritual un-recordable on fixed analogue or digital media. The effect of these pieces, from the clangourous, lamenting … *sofferte onde serene* … for piano and tape in 1976 to *Prometeo*, his gigantic sonic installation for Venice in 1984/5 is both to focus objectively on the minutiae of individual voices, textures and sounds and to explore the inner world of our own imaginations and ways of hearing.

I was eight years old when my grandfather took me to listen to the rehearsals of *Prometeo*: it is Nono's magnum opus, a piece he calls *Tragedia dell' ascolto* 'Tragedy of listening', involving a theatrical set-up with groups of singers and instrumentalists stationed around the hall and the audience, all projected and manipulated with live electronics. (*Prometeo*'s original space was a 'wooden ark' designed by Renzo Piano.) The experience of the piece is resonantly mythical and resolutely contemporary; over more than two hours it becomes less a drama about Promethean ideas and more a dramatization of what it means to listen, to find your place in the slowly yet suddenly changing soundscape projected around you; what it means to find the work's elusive meaning from the textures of mysterious vocalisation you hear throughout the piece.

The goal of my pre-compositional approach and its connection with spectral analysis is often a point of departure and arrival; especially when I try to integrate computer-synthesized electronic sounds with the instrumental sounds. To realize this goal, the instrumental sounds first need to be 'disintegrated'—reduced to their elemental components—then recomposed, synthesizing the elements into new aggregates to produce, as desired, either timbre or harmony (depending on the weighting of amplitudes and the type of listening suggested by the context). This almost 'scientific' approach to composition takes me close to Scelsi's decision to de-compose the sound into its spectrum, and not to compose (*cum-ponere*) sounds with one another. De-composing the sound into its spectrum is a good description of the departure point for the compositional method called 'spectral'. Though spectral music is very different from Scelsi's, and mine, in its sonority and structure we all share a similar attitude towards the phenomenon of sound.

The connection between my music and Scelsi's lies in this attitude, more than in a comparable style or aesthetic; the compositional techniques are completely different, except for a few superficial similarities (eg: microtones, attention to dynamics, continuous processes). But this attitude, shared by Scelsi, the 'spectral' composers, and many other contemporary composers of all kinds, as Grisey and Murail, is crucially important to me. It is a complete change of viewpoint, a wholesale reversal of the western musical tradition, which for centuries has been based on combination and superimposition. We no longer seek to 'compose', 'juxtapose', or 'superpose', but rather to 'decompose', or even, more simply, to 'pose' the sonic material (*poser le son*). Many non-European examples (Indian raga, the abrupt melisma of Japanese Noh, the complex rhythms of Bali, or the vocal techniques of the Tibetan monks) and many

others are found in Scelsi's work; some reflections of these musics emerge also in my work. But, in my opinion, though the East may provide inspiration, it is pointless to imitate an eastern mind-set, which can only have value in the context of a specific culture, and still more worthless to adopt the cultural manifestations of this mind-set. I thrive the real revolutionaries are those who have fundamentally changed our relationship to sound. And for a revolution to have a bright future, it must be constructive and positive, not defined as a set of taboos (even if these taboos are discreetly called 'constraints'). One thinks, of course, of the other 'reconstructors' of this century, of Varese and Ligeti, not forgetting all we owe to the experience of electroacoustic and computer music.

The Quattro Pezzi per Orchestra (su una nota sola), four pieces each based on a single note, are a radical product of this evolution and the are at the root of my *De Imago (Materia) Sonora*. For Scelsi, the principal object of composition then becomes what he calls the 'depth' of the sound. It is primarily a question of working with timbre, taken in the broadest sense: the global timbre of the orchestra as a whole. The composer is thus concerned with dynamics, densities, registers, internal dynamism, variations in timbre and micro-variations of each instrument: attacks, types of sustain, spectral modifications and alterations of pitch and intensity.

1. De Imago (Materia) Sonora

Both the title and the compositional process of *De Imago (Materia) Sonora* are explicitly linked to the theme of my *De Materia* cycle. Behind all the pieces of this long series, closely inspired by Lucretius's *De Rerum Natura,* is an attempt at putting forward one possible configuration of the constituent elements of the musical matter. In this work I analysed the basic features and inter-relation of some previously selected basic constituent elements than I digitally processed all the material with regard to matters of fragmentation and mutual interaction along precise sound spectra.

One of my main points of departure in the composition of this work was the fragmentation and redefinition of certain instrumental idiosyncrasies. For example to present new possibilities for the quartet *scordatura* (Table 1) was used

Violin:	1st string F sharp	2nd string D
	3rd string Bb	4th string F
Violin:	1st string F	2nd string C sharp
	3rd string A	4th string E
Viola:	1st string B	2nd string G
	3rd string Eb	4th string Bb
Cello:	1st string Bb	2nd string F sharp
	3rd string D	4th string A

Table 1: Strings' scordatura used in *De Imago (Materia) Sonora*

I had carefully explored this original system along the years with some of the chamber solo works I wrote for David Alberman (violin), Garth Knox (viola) and Rohan De Saram (cello). The challenge was to have a functional scordatura with an augmented triad at the bottom and the remaining string an octave and a major seventh above the lower one. Important was also to define a semitone (or a minor second – or a minor ninth) between the two violins and the viola and the cello. One of the major challenges was obviously to consider the strength imposed on the strings and the bridge by this procedure which could damage the instruments, but also present technical and practical impediments: the chosen solution was considered ideal by the performers and used ever since.

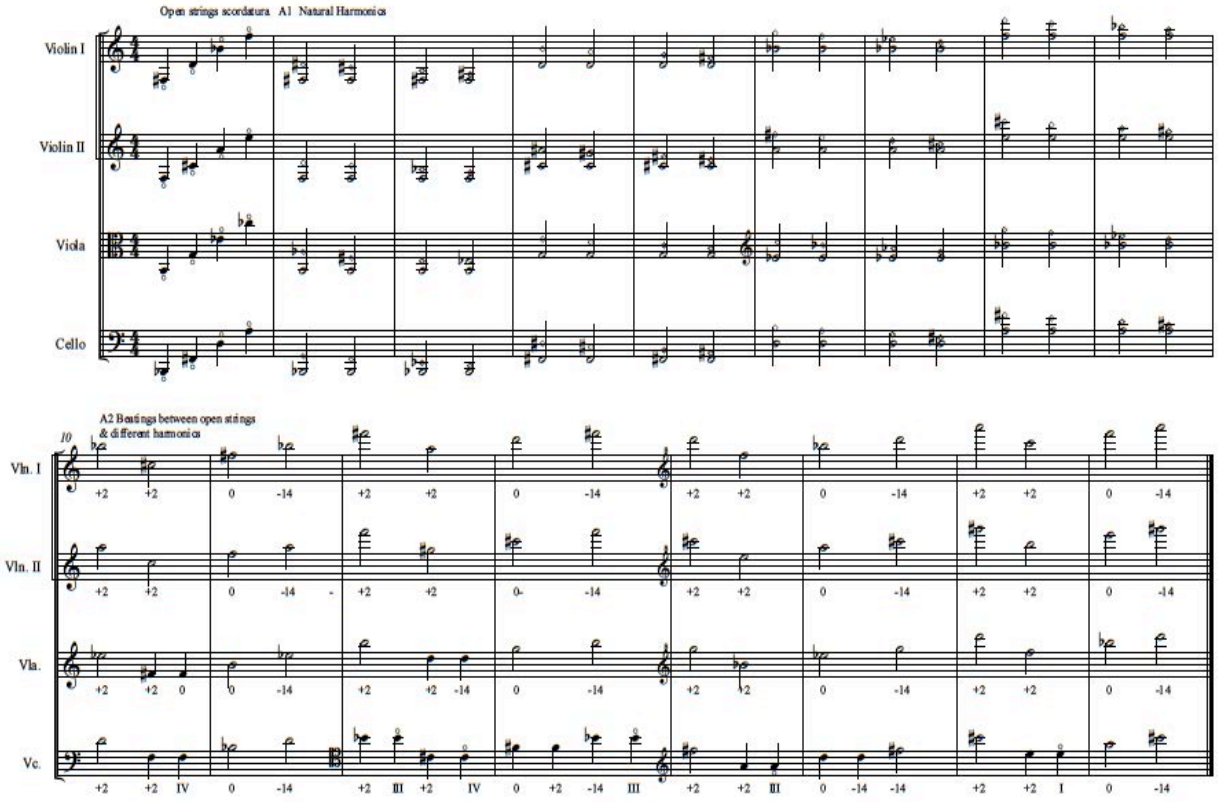

Fig 1:Scordatura, harmonics and beatings in *De Imago (Materia) Sonora*

The particular scordatura (Fig. 1) was selected to facilitate a particular series of single and double natural harmonics, and presenting the possibility to exploit the difference in cents between natural, artificial harmonics or open strings. The harmonic shift, which triggers the whole composition, allowed me to use different beatings between frequencies with variations from a few cents to almost a semitone. When two sound waves of different frequency approach your ear, the alternating constructive and destructive interference causes the sound to be alternatively soft and loud - a phenomenon which is called 'beating' or producing beats. The beat frequency is equal to the absolute value of the difference in frequency of the two waves. Arising from simple interference, the applications of beats are extremely far ranging.

I have transferred these interferences across all the domains and treated them as polyrhythmic patterns and intensity layers. This process allows me to obtain internal consistency and coherence while I constantly look for an internal causality in the development of my work. Creating a self-induced transformation, which connects musical matter and form, allows me to think at the piece as an organism, which develops and grows according to an internal process and living force.

I regard this procedure as a sort of osmotic process between diverse components in some sense akin to what often happens in most biological organisms during their developing phases. In retuning the strings I introduced minor and major sixths instead of the usual perfect fifth between the strings, thus creating a shift between the listeners and performers' expectations about the actual perceptive outcome. The scordatura also facilitated a particular sequence of chords, all connected by at least one common tone and following two divergent lines of gravitational attraction. This fragmenting, deconstructing and re-assembling of matter aspires to create a sort of genetic unit I view

as necessary, even if not sufficient, for the musical organism to grow and develop naturally. In section G I take a previously 'fragmented' melodic line, or *'frozen melody',* and begin re-assembling it in a process of progressive melodic condensation (Fig.2) or sublimation that is fully completed in bar 531, at the end of the work.

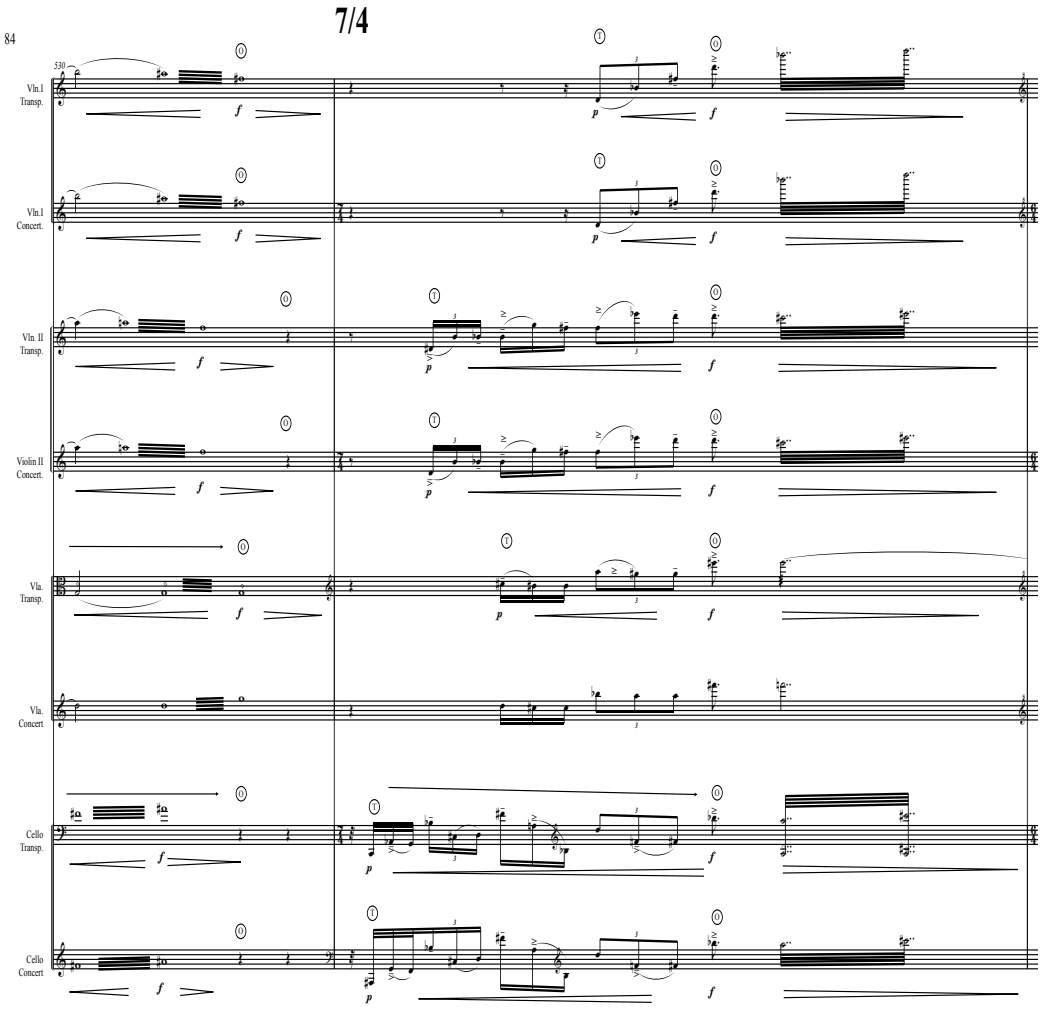

Fig. 2: 'Melodic condensation' in *De Imago (Materia) Sonora*

While writing this work I conducted a long series of internal and virtual listening simulations in three different locations: my studio, Experimentalstudio des SWR, rehearsing room, and the venue of the concert. My listening always mixes three perspectives: open/phenomenological, music-focused/analytic, and hermeneutical. I applied phenomenological methods to develop the sound in time, analytic methods to shape and define the musical form, and hermeneutical strategies to intensify the communication and interpretation of feelings, references and historical musicological meanings of used materials. In this work my intention was to 'support the freedom of the music object to show itself in its multi-dimensional polyphony of sound, form, and reference'[13].

From the start, the use of the performance space played an important and determinant role both technically and aesthetically. The first step was to decide where the loudspeakers would have to be positioned in order to properly exploit the acoustic properties of the space and turn them into parameters within my composition. I planned for sounds to appear from behind or in front the audience and also manipulating the speed with a Doppler effect. In my composition the space, the position and directions of the loudspeakers are themselves considered as instruments and musical parameters.

I constantly relate to all these spatial and temporal musical vectors while writing my work as far as they deeply influence one another along a constantly redefying hierarchical scale of importance. The semantic of every sound in this way is directly or indirectly changed and integrated, always considered as an active parameter for the construction of the score.

[13] *Philosophy and the Analysis of Music: Bridges to Musical Sound, Form, and Reference*, Lawrence Ferrara, Greenwood Press (1991)

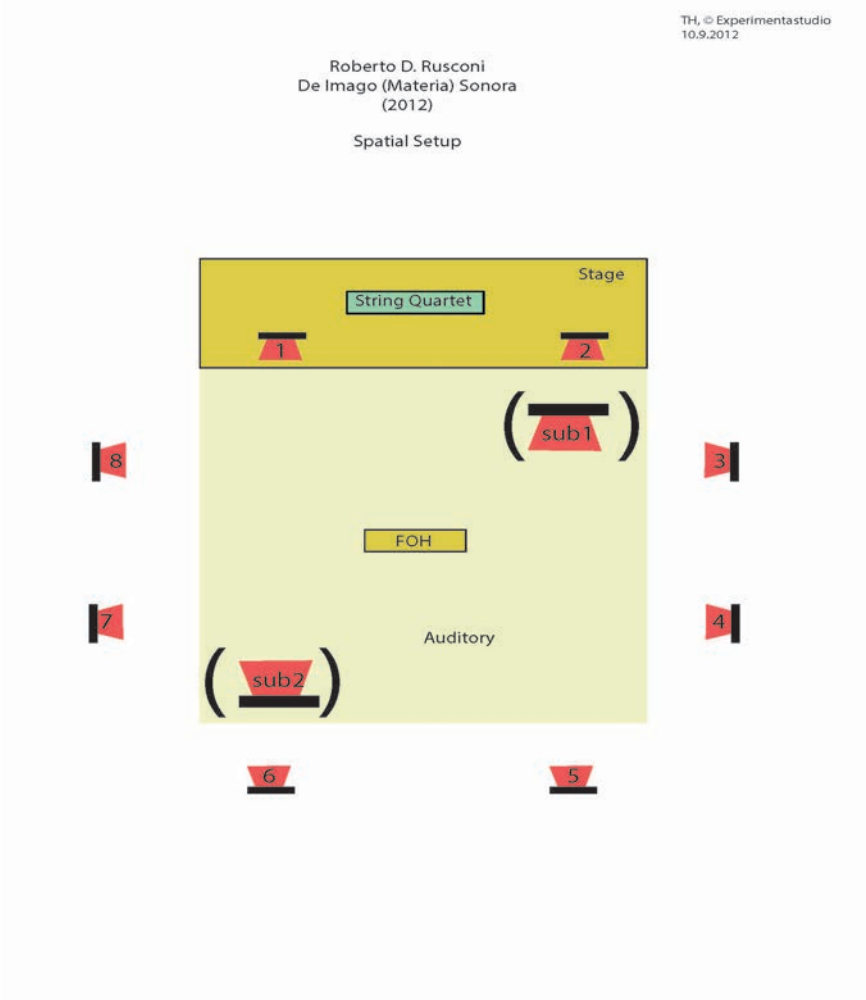

Fig. 3: Sound projection plan in *De Imago (Materia) Sonora*

Sound projection (Fig. 3) in my work serves to articulate the identification of sonic textures, rhythms and many other forms of musical interaction. To achieve this I designed logical vectors of spatial movement to highlight selected patterns of rhythm, pitch and the spectrum. Pitched sounds were organised into monophonic lines and then broken up and distributed between individual loudspeakers or sequences of loudspeakers positioned around the space. I created a contour for each *Klangfarben melodie* and carefully programmed it to follow a path through the diffused space,

always with a specific and identifiable pattern of spatial movement. Thus it was possible to associate discrete *Klangfarben* sounds, arranged as a melodic pattern, with specific spatial locations, or even precise individual loudspeakers. With repetition, spatial positioning of sounds becomes almost 'thematic' and structural, with the potential for variation and development once a recognisable pattern has been imprinted in the listeners' memory. In our perception of spatial patterns, the focus upon polarized pitches becomes of the utmost importance, although similar effects are possible with sequences of un-pitched sounds.

I allocated specific material to discrete zones within the diffusion system and I used individual loudspeakers with simple patterns of musical interaction to simulate effects such as 'question and response' like those used in the *cori spezzati* techniques of early Renaissance Venetian antiphonal works. To expand the range and complexity of interactions between the zones I used the interruption of anticipated patterns of spatial-morphology, for example suddenly inverting direction or point of departure of the selected routes, to create tension and release once a pattern or behaviour of musical interaction had been established. One cardinal factor in the development of this work was altering the speed of spatial movement, particularly in L2 where the second violin and viola cadenzas increase the overall tension of the piece (from bar 178 to bar 185). To arrive at a precise climax I also increased the polyphony, the number of concurrent, interacting spatial patterns and subsequent textural density of the spatialization.

I considered the potential disorientation experienced by the audience a major expressive tool; I also especially made use of complex and irregular patterns of spatial-morphology in contrast with periods of relative spatial stability often at the end of the central sections. I manipulated the sound diffusion, creating a sense of distance and of

nearness, drawing sounds outwards or inwards from a wider panoramic stereo image into a narrower, central focus image centred on certain polarized pitches. The dynamic contour of complex musical material is shaped also through spatialization. In my sound projection algorithm (Fig. 4) I explored the possibility of fragmenting sound spectra amongst a network of speakers, considering every note a cluster of tones (heard as a single timbre) in one area of the space (perhaps from a single loudspeaker) and gradually decomposing it into individual frequency components dispersed to individual zones of pre-set trajectories.

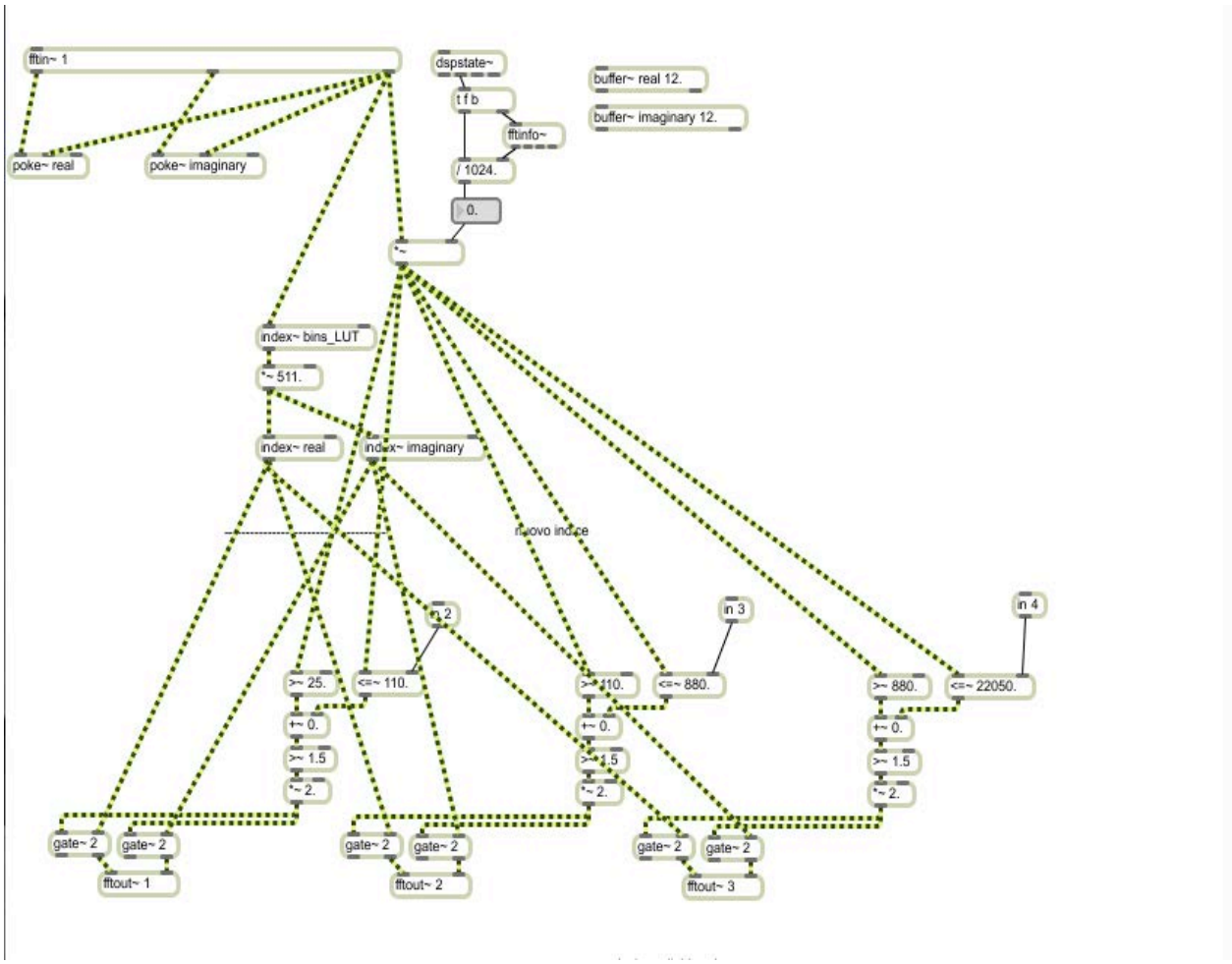

Fig. 4: Sound projection algorithm in *De Imago (Materia) Sonora*

In the digital soundtrack I manipulated many original sounds with spectral delays to obtain multiple graduation of granularity[14] across space. Granularity in my work is not only a method of sound-synthesis, but also a broader notion , which may include spectra derived from granular re-synthesis of recorded sounds. By directly mapping granular parameters to different spatial behaviours I have been able to experiment with the continuum between sound texture and rhythm as a manifestation of space.

One of the most structurally important digital sound processing approaches has been realised using a simulation of the old semi-analogue DHM89 by Publison. The software and its analogue original, which I had experimented while in Germany at Experimentalstudio des SWR, served particularly the purpose of applying pitch-shifting transformations to the sound on the cello. Given the cello's particular characteristics it was possible to thoroughly investigate nuances and differences obtainable by changing the rate of vibrato, cross point or loop point[15] and applying these micro-transformations to create local tension and distension that often produced wider structural and perceptive changes.

Poetical and technical motivations led me to keep pitch and timbre, always changing and interacting; echoing the way in which the internal components of a biological organism behave during the life span. The pitch domain, for example, where

[14] Granular synthesis is perceived as a relatively recent development in sound synthesis, but it can also be seen as a reflection of long-standing ideas about the nature of sound. Quantum physics has shown that sound can be atomically reduced to physical particles (Wiener 1964). This physical form of sound was first envisioned by the Dutch scientist Isaac Beeckman (Cohen 1984). This theory has evolved the particle theory of sound into a synthesis method whereby the natural sound particle is imitated and magnified, referred to as a grain. The grain is then layered with other grains, either cloned or extracted through a similar process as the original to create different sounds and sonic textures. Granularity is the extent to which a sound system is broken down into small parts, either the system itself or its description or observation.

[15] In the rack unit DHM 89 B2 the pitch shift mode provides a pitch shifter, which is known to be used by artists of the past (Boulez and Stockhausen). Memory latch can freeze the memory buffer, which then is looped. You can select start- and endpoint of this loop with the cross point-pots. The sample reverses if you turn the right pot less wide than the left one.

the beatings happen in a difference of two to fourteen every second (from bar 68), leads the transfer to the rhythmic domain in which the periodical beating was previously created. This process begins to appear as a rhythmical group of semiquavers quintuplets (from bar 74). The integration between the acoustic and the electronic vibrato (in different rates and regions) can easily influence the rhythmic transformation of some events and, when added in multiple layers, directly create frameworks in the formal level. I applied a vocoder[16] based on the source-filter model of speech production (Fig. 5).

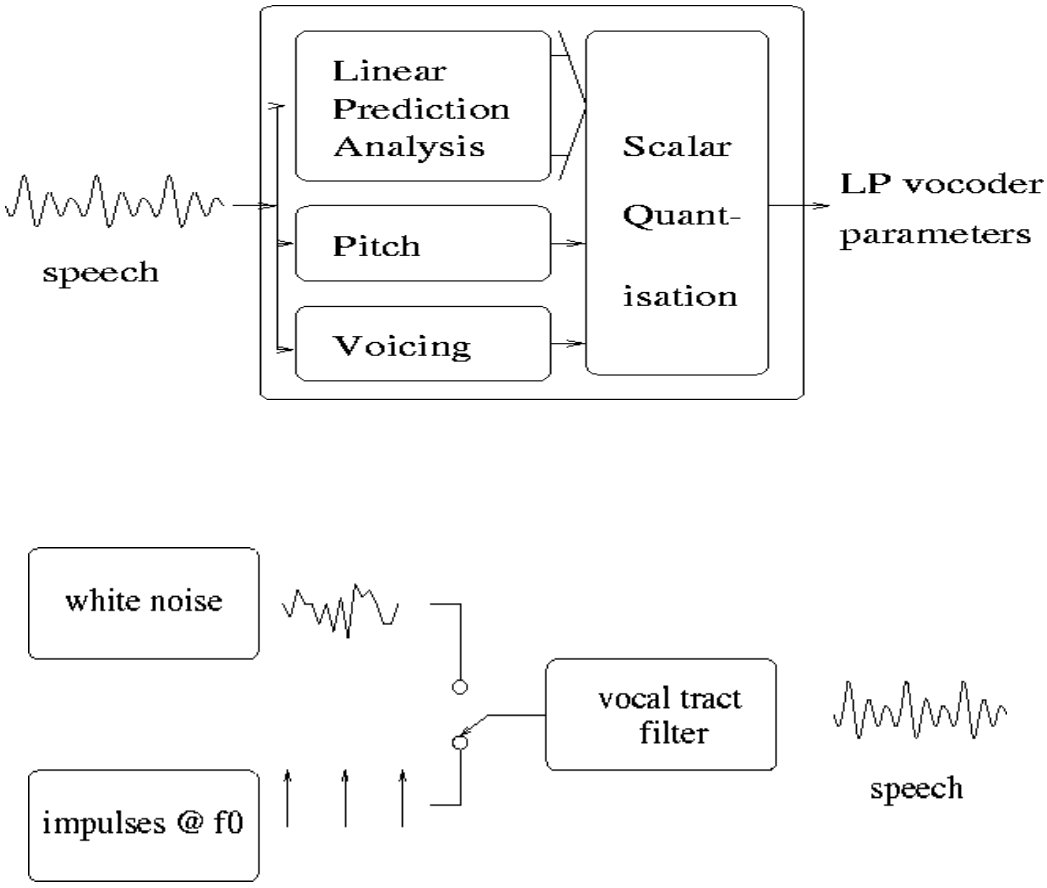

Fig. 5: Vocoder and source-filter model in *De Imago (Materia) Sonora*

[16] A vocoder is an audio processor that captures the characteristic elements of an audio signal and then uses this characteristic signal to affect other audio signals

The idea was to superimpose, acting as transforming filter, sampled sounds produced by singing, whispering, inhaling and exhaling, talking to the strings instruments. This procedure aimed to create an additional subtle interaction between the human and the instruments, almost a meta-instrument. Transferring noises, breath, vocal attacks and shape of the human speech to sounds produced by the strings allowed me to give a distinctive colour and nuance to the textures, turning them into waves of sound constantly transforming in their constituent material. This procedure causes a continuous shifting of the formants, especially if they are prolonged through long time stretches. In this way I inserted a constant movement of the resonances and harmonics in the upper frequencies of real and virtual fundamentals. The use of upper and lower pedals (bar 68 and 69) is important because I often polarize frequencies that come back stimulating the memory and reinvigorate its creative reconstruction. I defined this innovative process during my lecture at the Warsaw Autumn 2012 as the 'act of creating hidden frozen melodies'. In these three years I also developed and used a highly defined pitch detection system[17] to further implement the spatialization patches. This original sound projection software allows different frequency bands of the same single frequency to be projected into different trajectories and speed. In this way the single sound is stretched, compressed in the projected space creating an additional and less invasive circulation.

The creation interacts with the acoustic space in a diverse way allowing chunks of the very same sound passing across different trajectories in diverse volumes and obtaining a more pervasive presence of the sound mass, giving it physical consistence.

[17] Arnaud Dessein, Arshia Cont, and Guillaume Lemaitre. Real-time polyphonic music transcription with non-negative matrix factorization and beta-divergence. In *6th Music Information Retrieval Evaluation eXchange (MIREX)*, Utrecht, Netherlands, August 2010

The sound projection was implemented and calibrated using the Halaphone[18], as a sort of homage to the previous work of Nono and his collaboration with H.P. Haller, (Fig.6) who was the precursor of this technique in the sixties.

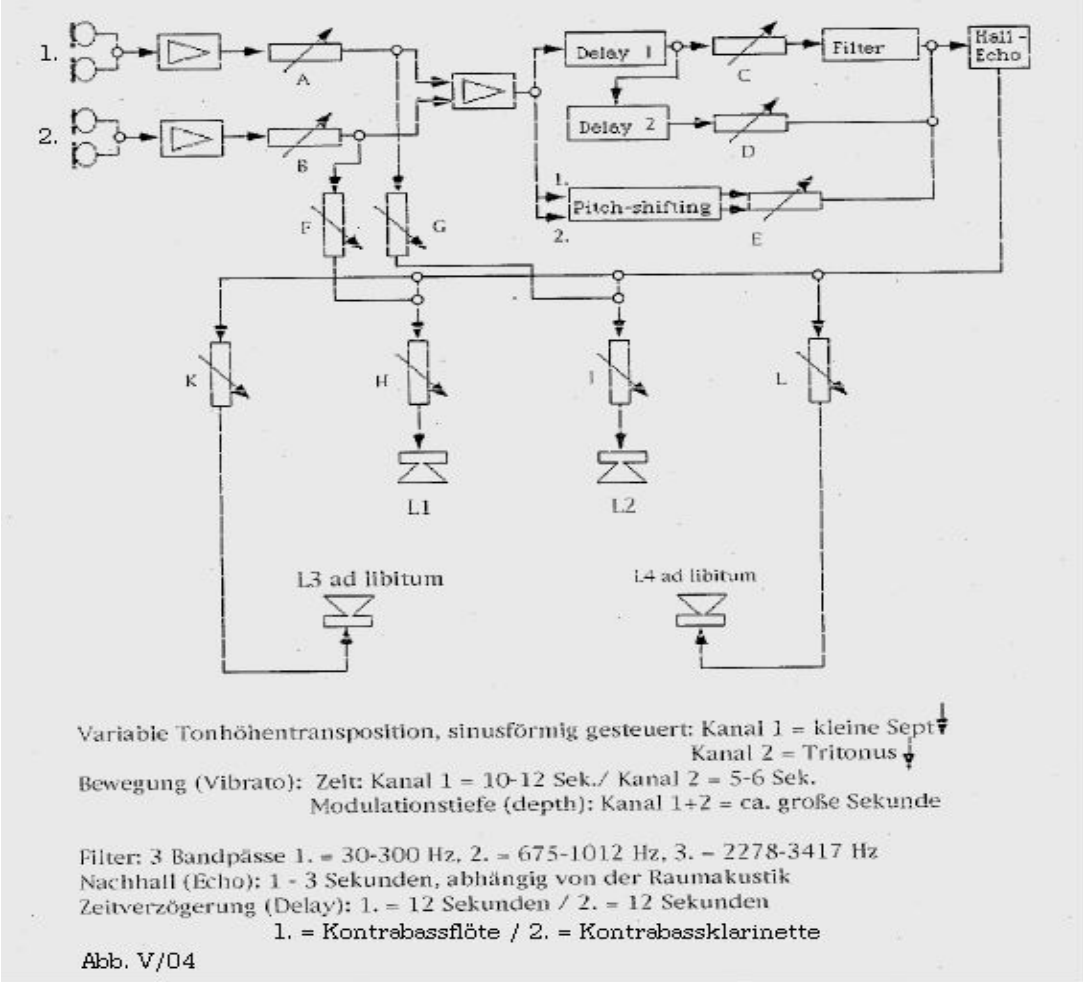

Fig. 6: *A Pierre* (Luigi Nono) H.P.Haller. The diagram with pitch shifting, sound projection, filters and delays which inspired the development of *De imago (Materia) Sonora.*

[18] According to inventor Hans-Peter Haller, the Halaphone is capable of "projecting sounds in various directions and at various speeds at will, projecting sound from point to point, making it move in circles around a hall, or making it move diagonally across a hall." (New York (January 20, 1973). "New German Invention Alters Sound Direction", *Billboard*, p.46. Vol. 85, No. 3. ISSN 0006-2510.)

2. Veni Creator Spiritus

This work is based on the Latin hymn *Veni creator spiritus* from the 10th century (Fig.7), which became one of the most widespread devotions in the Western church. The simple, nearly syllabic[19] hymn is in the jubilant 8th mode; the simple yet strong cadences of each phrase underscore the text.

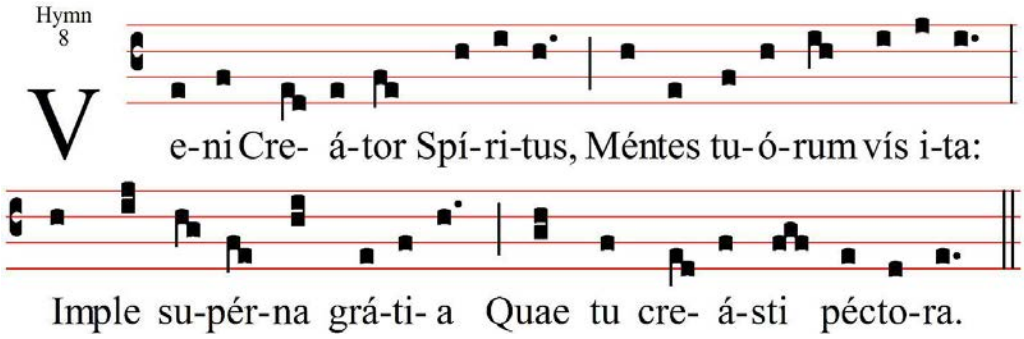

Fig 7: Original Gregorian Hymn of *Veni Creator Spiritus*

The study of musical syntax and phonetics was central to my composition, and allowed me to structure musical material within the piece using phonetic imitation. Instrumentation and musical topics were used to create textual musical analogies while melodic material derived from the original chant allowed progressive transformation, variation, compression and expansion, polarization and transposition of the original material. The purpose was to create many different analogies within the text. The numerical value seven (Table 2) was derived from the original verse *'septiformis*

[19] Vocal music where each syllable is given one note only. http://www.educationscotland.gov.uk

munere' and from the total number of stanzas[20] and exists to define numerous musical parameters: pitch, intervals, rhythms, duration, instrumentation, articulation and various playing techniques.

PITCH	TIMBRE	DYNAMIC	ATTACK	PARTIAL	RHYTHM	DENSITY
F	Novib/vibratissimo	pppp/ffff	slap	5th	3:2, 6:4, 12:8	solo
E/Eb	Colour trill	fp	tongue ram	7th	5:4, 10:8	bicinium/tricinium /quartet
G/Gb	Tremolo	Sf,sfz,sffz	staccato	11th	7:4, 14:8	one section
A/Ab	Flutter tongue	tenuto	airy tone	13th	9:8	two sections
B/Bb	Harmonic	cresc	tenuto	15th	11:8	three sections
C	Alternate fingering	decresc	key click	19th	13:8	four sections
D/Db	Airy notes	silence	pure tone	21th	15:8	tutti

Table 2: Influence of number 7 in *Veni Creator Spiritus*

Allowing an aspect of the text to be transformed into a numerical value that controls parameters creating a dialogue between text and music, language and form is a process widely used in this work and I refer to it as an *'osmotic'* process. The mostly polyphonic nature of the work and its structure allowed me to atomize and polarize

[20] The number *"seven"* permeates the totality of Scripture because the number speaks of God's divine perfection and perfect order. The actual number 7 appears 287 times in the Old Testament (7 x 41 = 287) while the word *"seventh"* occurs 98 times (7 x 14 = 98). The word *"seven-fold"* appears seven times. In addition, the word *"seventy"* is used 56 times (7 x 8 = 56). *The signature of God*, Grant.R. Jeffrey, Waterbrook Press (1995)

single words and cells of the text (bar 16 where the word Ve- on the low note F of the Basses and solo Bs/Bar voices is then transferred as pure pedal all along the work).

In the musical form this single phonetics element acquires a superior musical logic, and I try to take the text to a realm beyond mere recollection, translation or quotation. The musical material here challenges the audience and the performers developing the dialectical relationship between sonorous and linguistic understanding to be decoded in many ways. Music develops along time and space, while its linear form is heard as a mainly syntactical division. Occurrences defining larger sonorous appearances are perceived as remembered, and create an alternative approach to the fruition. Working with a sacred text I remembered that the verses had been originally developed and formed following a strict ritualistic order, in which exact repetition predominates as a strengthening factor and clarifies the form.

Symbols mean nothing if not experienced within a precise ritual, therefore my work is highly ritualistic music in which physical movements and positions are as important as the single musical components and the structural framework. Through the centuries, music has separated itself more and more from the religious sphere, and canonical texts have been slowly 'shadowing' behind a sounding sign, which progressively became stronger and independent. The progressive detachment from the 'verbum' has allowed music to be permeated with a new dimension of hermeneutical activity. Even in music with a spiritual or liturgical essence the listener has to rediscover his role, from consumer of pre-set forms and frameworks to one of active exploration, daring to explore uncharted territories in musical realms and within him/herself. The idea of 'self-enhancement' is here carefully and constantly pursued; the ability to actively respond to music that is both challenging to the performer and the listener is

seen as a path toward edification, the work emerges as answer to an inner necessity leading to an unexpected path of initiation. The decision to explore a text with such a powerful historical framework allowed me to look backward and recall gestures and experiences pertinent of an almost forgotten past. It is an opportunity for the (re)discovery of the complexity of sound felt as a complex organism which constantly unveils layers of history and meaning. An example is the action of the *flagellants*[21], believers who were self-inflicting pain, which is recalled during the first measures by the string section figuratively throwing the bows backwards as a whip (Fig.8). Another example is in bar 6 and bar 7 where the singers use ropes recollecting sound and gestures of the medieval believers.

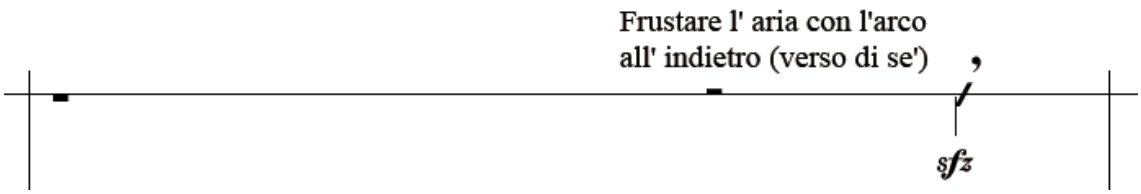

Fig 8: Description of the '*flagellants*' bow movement in *Veni Creator Spiritus*

At the same time the act of abstracting the very same sonorous intentional object ideally allowed me to progress toward the immanent necessity of an intense and expressive sound. In this way the religious chant, with its pulverized framework, allowed me to turn pronunciation and meaning into a working hub for the creation and understanding of musical material. The choice of dividing and placing the choir and the

[21] 'flagellants', medieval religious sects that included public beatings with whips as part of their discipline and devotional practice. Flagellant sects arose in northern Italy and had become large and widespread by about 1260. Groups marched through European towns, whipping each other to atone for their sins and calling on the populace to repent. They gained many new members in the mid-14th century while the Black Death was ravaging Europe. Though periodically suppressed by the authorities, flagellant sects enjoyed sporadic resurgences into the 16th century.

instruments around and not in front of the audience felt natural for a musician, like me, born and raised in the shadow of the 'Basilica di San Marco' in Venice, and mentored by the visionary performers of Luigi Nono's *Prometeo*. The performers spatialization (Fig.9) exists also as an analogue to the infinite places where the *creator spiritus* may manifest itself recalling to the listeners' memories the *raison d' etre* of the *cori spezzati*.

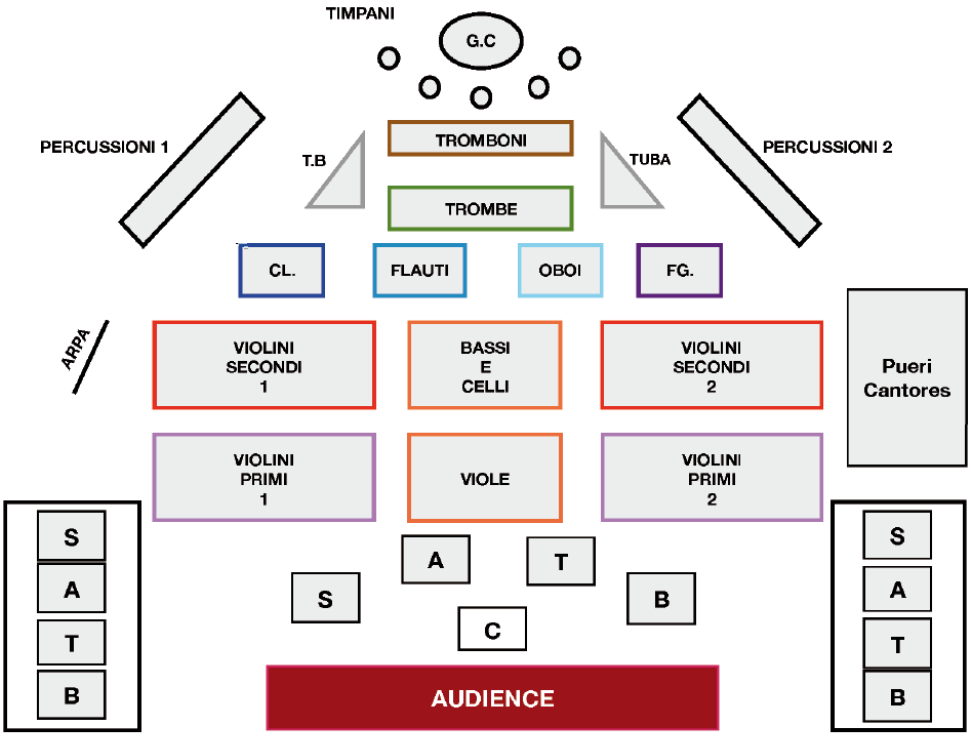

Fig 9: Disposition of the instruments and choir in *Veni Creator Spiritus*

The piece also focuses on the invisible boundary between those sounds we label 'noise' or non-harmonic representing the breath of the spirit (as in section A to section B) and those sounds we grant the status of 'musical' meant to represent its appearance

(from bar16 on). Several categories of musical objects are transformed and entangled: for example the inhaling and exhaling of winds and brasses (bar 3), and in the brass section with microtonal melodic contours. A thematic example is in the initial part given to the timpani (bar 1-2-3) or later with a melody of chords or timbres (from bar 16). Underlying this polyphonic development a slow spectral harmonic texture drifts towards even darker colours, a progression that grows more active through progressive fragmentation and expansion (especially section K) until we reach a central 'opening expansion', section L; the following sections grow longer and thicker, the density increases representing the intangible manifestation of the *creator spiritus*. The ascending 'longitudinal phrases' (Fig.10) begin to corrupt the music material (from bar 134), but fully impacting the formal structure only towards the end (from bar 160), representing a moment of high musical tension and celebration.

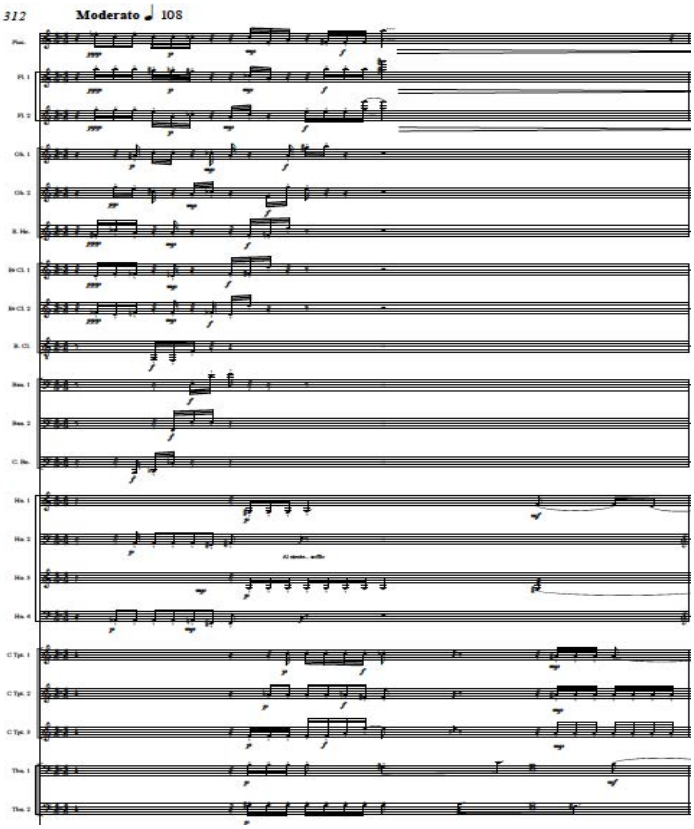

Fig 10: 'Longitudinal phrases', winds and brass section, in *Veni Creator Spiritus*

3. De Materia Solida et Corporea

All the works of my *De Materia Cycle* deal with the same idea of the musical work intended as a creation emerging from a seed. This concept has been presented all along the history of music from Pythagoras to Schoenberg[22] via Beethoven and Wagner. The notion of having a seed as a motivic cell defining a microstructure pervaded my formative years in which I eagerly researched texts of the ancient scholars from Zarlino[23] to Vicentino[24], from Kircher[25] to Fux[26]. It is from these writings that I deduced my individual approach to polyphonic writing and my interest for the reverberation of constitutive parameters, an interest that became an inseparable part of my poetic and technic approach to composition.

De Materia Solida et Corporea is the first work of the *Materia daedala rerum* triptych and develops the biological growth of the musical organism, with its life span constantly intertwined with a 'viral' contamination of its constitutive components. My model extends to the concept of interacting sound organism and considers the instruments, the performers and the audience a unique 'bio-system'. In this work my interest was based on analysing the connection between the organic growth of the structure/framework and the 'materiality' of the single musical component.

I would mention that the processes of inhalation, exhalation, heart palpitation and pulse permeate all the works of Luigi Nono and many of the early works of Gerard

[22] A.Schoenberg:" Used in the aesthetic sense, form means that a piece is organized; i.e. that it consists of elements functioning like those of a living organism" from Fundamentals of Musical Composition , London, Faber and Faber Limited, 1967.
[23] Gioseffo Zarlino, *Istituzioni armoniche*, tr. Oliver Strunk, in Source Readings in Music History. New York, W.W. Norton & Co., 1950.
[24] Vicentino, Nicola. (1555) L' antica musica ridotta alla moderna prattica. Antonio Barre, Rome. (Gallica)
[25] Tiziana Pangrazi, *La* Musurgia Universalis *di Athanasius Kircher*, Firenze: Olschki 2009, pp. 206, ISBN 978-88-222-5886-1.
[26] Fux, Johann Joseph; Mann, Alfred; Edmunds, John (1965). *The Study of Counterpoint from Johann Joseph Fux's Gradus ad parnassum*. New York: W.W. Norton & Co. ISBN 0-393-00277-2. OCLC 494781. LCC MT40 F83 1965

Grisey, *Partiels* and *Periodes,* and other spectral composers. I tried to integrate an innate sense for the stable versus the chaotic, typical of the life cycle of every living organism. The initial 'blocks' (Fig. 11) in section A (bar 1 to 16) face a spontaneous combustion under the particular pressure or resistances of its own material (for example the multi-phonics) and reveal a dialectical thinking that moves between spontaneity and rigour.

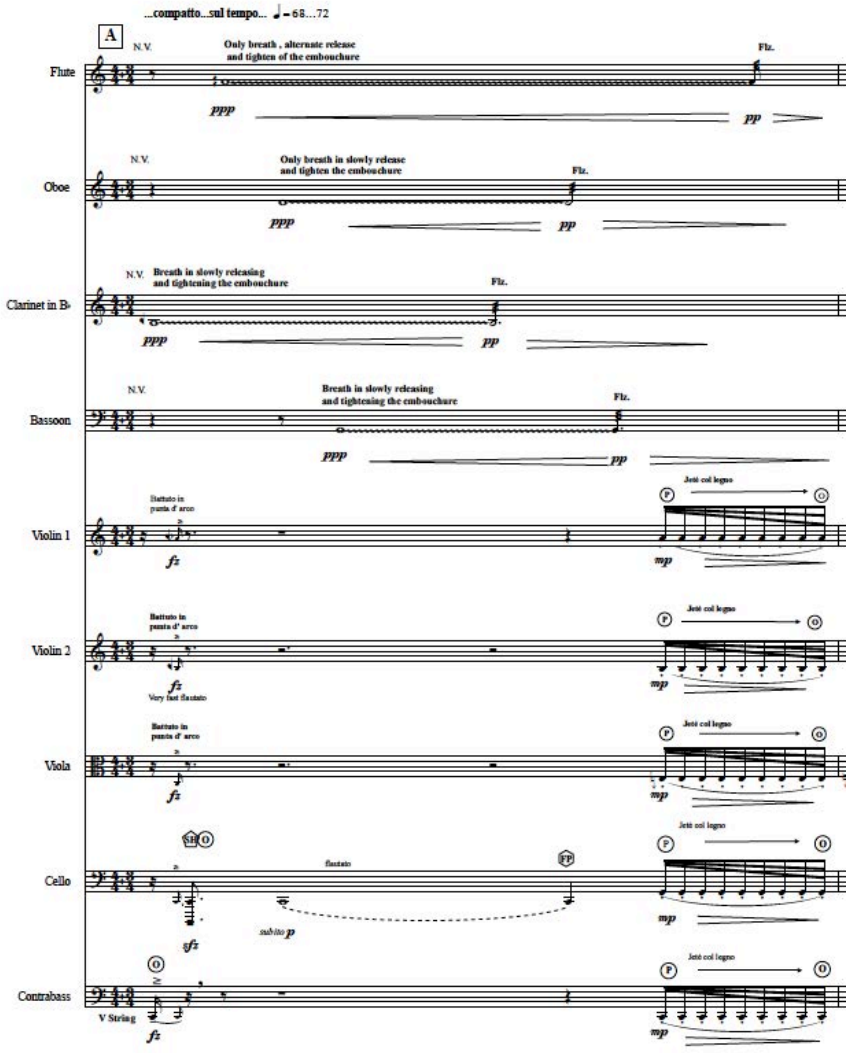

Fig 11: Initial sound block (C spectrum bar 3) in *De Materia Solida et Corporea*

This work is of the utmost importance to me because it underlines how essential it is to imagine and feel how a given music is physically played: the tongue against the teeth, the intake of breath and the bow pressure, the fingers touching and vibrating as well as the keys being hit. All this represents and becomes transfer between the score, and listeners through the performers, their instruments and myself.

The performers project diversified waves of accent, duration and breath of varying levels of density and gravity (bar 25 and 26). This radiating energy can go inward as well as outward and produce perceptive effects but also encourages the audience to raise its alertness and receptivity. I work against a more traditional approach that seeks the best range for the most suitable instrument. I find that this physicality of sound is often best achieved when the instrumental efforts work against the sounding result, for example when extensions and dynamics usually considered 'very difficult' or 'inadequate' for a particular instrument are used to achieve a tension that is heard in the quality of tone and its production. About this issue I quote Bauer –Lechner Recollections of Gustav Mahler[27]: 'If I want to produce a soft subdued tone, I don't give it to an instrument which produces it easily but rather to one which can get it only with effort and under pressure'.

The process I used in *De Materia Solida et Corporea* is similar to those sometime found in late music of L. Nono, and the music of A. Guarnieri and G.F. Haas especially when the exposing structures are presented with an austerity that rejects all that is the unnecessary as well as use of the expressive tone to shape structure and form. My main reference is L. Nono, especially in the last works *Hay que caminar Soñando* and *Prometeo* when the listener finds naked intervals, minute hovering, unisons and non

[27] Recollections of Gustav Mahler, Natalie Bauer-Lechner, Faber & Faber; June 2013

vibrato passages that slowly introduce microscopic variations and interventions that expand or compress the notion of sound itself. Guarnieri and Haas instead, even if working at two opposite ends of the musical spectrum, empower the idea of a 'musical density' and, with Nono, focus their attention on what has become almost an obsession for me: the act of 'internal' listening as a process of initiation and recognition of our hidden, suffocated and almost annihilated perceptive[28] and emotional sensibility. My objective in this work, as throughout the whole *De Materia* cycle, has been to present a friction between materials belonging to different morphological categories and allow the listener and the performer to get lost in their listening (bar 49, 71 and 85).

I often mix the harmonic and non harmonic, noisy and melodic, and artifice with purity. I juxtapose and intermingle material with almost opposite characteristics; porosity (multiphonics or flatter tongue) versus fluidity (*flautando* and *sul soffio*) as well as sustainability (long *tenuto* textures) in contrast with immediacy (*sforzando, forzando and fortepiano*). The only way to make these contrasting elements interact is via an intricate contrapuntal and polyphonic process, that recalls some vocal techniques (for example the use of imperfect consonances to render the melodic and harmonic movement smooth and enjoyable) typical of the renaissance, as in Orlando di Lasso, Schütz and Gesualdo, but has a completely different meaning.

In my work, noise is just an emotional recollection that wants to take us back to a primordial ethereal ancestral world when we were striving for survival, and our perceptive apparatus was not only in constant alertness, but able to spatially localize,

[28] Every day, we are exposed to hazardous noise and undesired sound. Our city life can often cause permanent hearing loss of certain frequency ranges while short term exposure to loud noises and daily unwanted sounds can cause a temporary change in hearing (the ears are stuffed up). Modern day's exposure to undesired sounds can also create physical and psychological stress, reduce productivity, interfere with communication and concentration, and induce hearing loss limiting the ability to hear high frequency sounds, understand whispered speech, and seriously impairing our ability to profound and careful listening.

differentiate and connect. I decided to create sections, which only rarely overlap the facilitated clarity and create a sense of decorum. In each section a recollection of an idea that has previously caught our attention is conserved and varied in its microstructure, re-proposed in a different locations and transformed. Varying the place of an element (for example the multiphonics of flute and bassoon at the beginning of the work with those of the oboe and clarinet from bar 52) allows me to create alternative vertical and horizontal perspectives, and triggers changes in the organism's nature, producing parallel perceptive domains and reactions.

The harmonic vertical expansion of the initial proposal is developed following precise projections according to the upper partials of the different sounds present at the bottom and played by the double bass and contrabassoon. The diverse virtual fundamentals support modulations obtained thought pivot pitches present in the upper harmonics (for example between bar 4 and bar 8 in the initial spectrum presentation-exposition-expansion).

I would like to end this chapter by underlining that my music is animated by a profound ethical tension reflected in my creative choices, my artistic practice and the sound worlds I create. Ethics here means a tendency to reformulate the relation between the individual and the community, between the subject and what is other, between one's own context and other contexts, cultures, worlds and traditions all interacting in the musical domain. All these topics play an important part in my creative practice, and I have many uncertainties and anxieties aware the composer's function and identity but I firmly believe that the authenticity of me as musician firmly lies in the possibility of performing, listening to and interpreting music in different and constantly renewable perspectives.

4. De Materia Nigra et Obscura

De Materia Nigra et Obscura was composed in 2013 for Klangforum Wien and it is my second work for Piano quintet and develops from an initial sound spectrum through sections which recur in varied ways, share similar qualities with the constant transformation of single micro musical cells running through it. In *De Materia Nigra et Obscura* one of the key processes is the use and manipulation of single parameters and their influencing one another along the time span of the composition.

I would like to introduce the original concept of 'organic component' of music material which in music can be defined as the representation of a sound character defined by a physical action (a gesture), through the control of specific sound parameters such as pitch (horizontally and vertically), rhythm, timbre (spectral centroid[29] and attack transients[30]), contour, texture, and dynamics. The organic component has not only the same features and developing manners of living organisms, but is as well capable of growth, interaction and exchange. In the twentieth century, some of these sound features (counter, brilliance and resonance for example) were called secondary parameters while later they became more prominent, often overtaking pitch and rhythm, and leading to the emancipation of their secondary qualities. We can see this in a piece like Krzysztof Penderecki's *Threnody for the Victims of Hiroshima* where texture is the main element instead of pitch or rhythm. This approach created new ways to compose; some of these became a substitution for rational (integral serialism - Boulez) or mathematical (stochastic music- Xenakis) processes, or in reaction to the

[29] The spectral centroid is a measure used in digital signal processing to characterise a spectrum. It indicates where the "centre of mass" of the spectrum is. Perceptually, it has a robust connection with the impression of "brightness" of a sound

[30] Attack transients are the way in which a string is bowed, a trumpet tongued, or a piano key struck, while decay transients are the way the sound dies away

traditional conservative rehabilitation of parameters that have simply exhausted their 'living charge' (neo- romanticism – Adams).

The major organic component in *De Materia Nigra et Obscura* is nothing more than a single spectrum (fully displayed in bar 1: a A major 'disturbed' by a Bb) (Fig. 12).

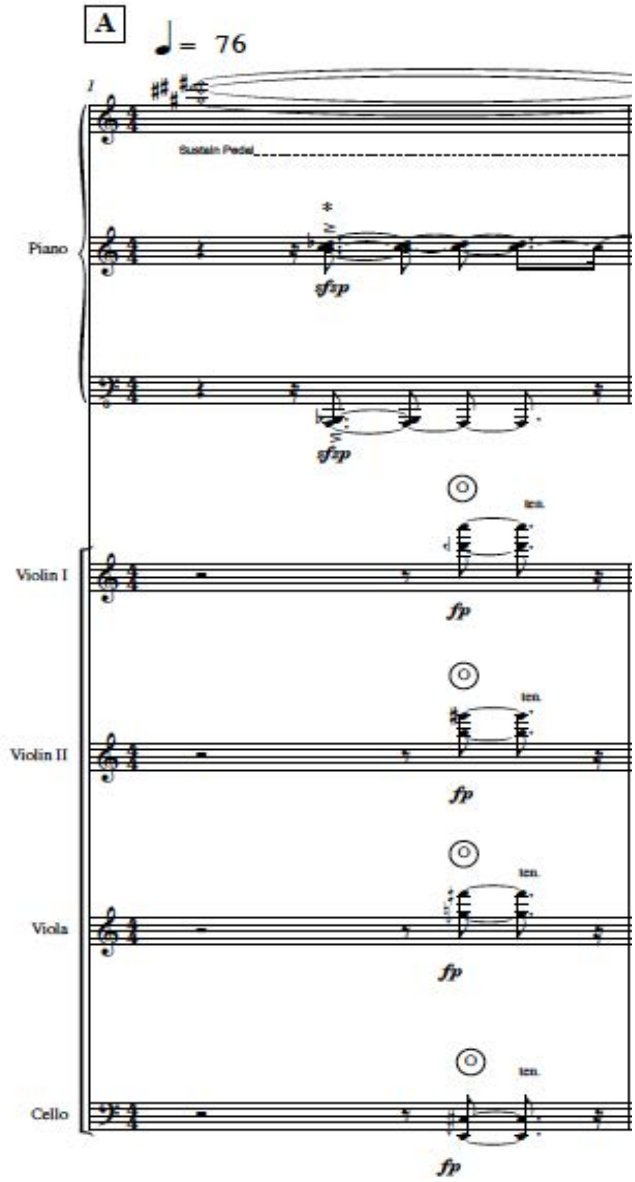

Fig 12: Initial single spectrum of the composition in *De Materia Nigra et Obscura*

There is a constant expanding and contracting motion inherent in the single spectrum itself and that is re-presented at the beginning of the exposing sections (bar 24, 44, 69 and 253). The pulse of each idea is constantly expanding, compressing, while remaining suspended and falling. I often augment and subtract the metronomic values bending and flexing them as a superimposing *tactus*[31] or to create a feeling of speeding up and slowing down (for example in section M from bar 172 to176) sometimes introducing single or double cadenzas (section N bar 180). The dynamics frequently swells and intermittently superimpose one another and even the texture and form are influenced by all the transpositions of the original spectrum (section H bar 75 to 80), making it truly organically fundamental.

De Materia Nigra et Obscura begins with Section A where the initial spectrum of the piece is first stated almost as an immovable block of stone. An expansion and contraction follows, as seen in section C, moves through some interferences that create beats between the lower partials and the higher resonances (for example adding in the low piano part a Bb, a A and a C sharp [Db]). This procedure not only creates clashes between major and minor thirds, that in that lower region of the instrument are particularly 'harsh'[30], but produces a whole series of parallel harmonics in the upper regions where microtonal variations occur among neighbouring partials, creating beats and widening single polarized frequencies[33] leading to the unravelling of most

[31] Today we see the measure as being the basic unit of rhythmic organization in which a certain number of notes of a specific value is "beaten" to establish the tempo. In contrast to this, theorists between the end of the 15th century to the middle of the 17th century speak of marking the space of a measure by means of a movement that is related to the pulse, or other natural phenomena of a twofold nature. Adam of Fulda is the first to speak of this movement in *De musica (*1490): « The *tactus* is the continuous motion of the ratio contained in the measure... It is nothing other than the necessary and appropriate measure of the mode, tempus and prolation". The Performance of 16th-Century Music: Learning from the Theorists, Anne Smith, Oxford University Press, 2011.

[30] This is due to the fact the interval falls out of the series of natural harmonics and creates non-harmonic beatings.

[33]The radical polarization of pitch sets and the wide bands of silence are the main characteristic of Anton Webern's work from Opus. 20

even partials. The fragmented melody (which appears in section F from bar 59) never repeats itself but constantly transforms and transposes itself, moving up and down, waxing and waning, until the instruments finally break free from a set of self-imposed limitations and move into the next section.

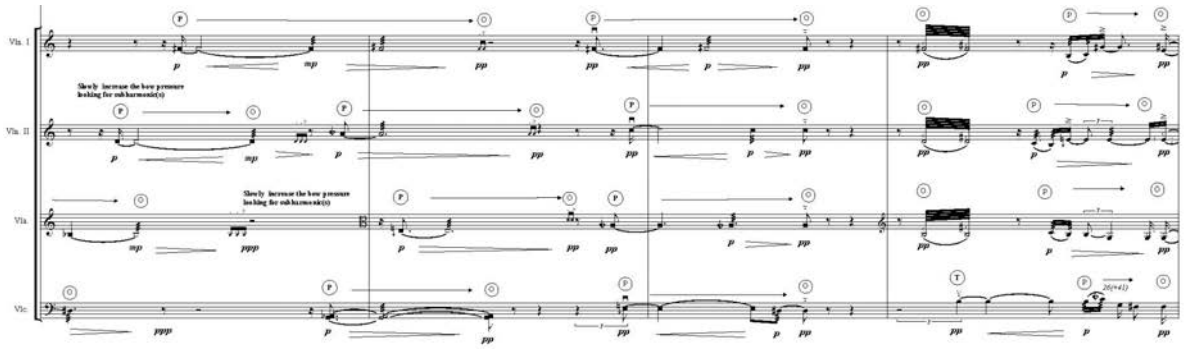

Fig 13: Fragmented melody appearance in *De Materia Nigra et Obscura*

I would like to underline that in the development of this work I reflected a lot on the sense of 'multiplicity' in a musical and artistic perspective. The Italian author Italo Calvino illustrates multiplicity in his Charles Eliot Norton Lectures[34] of 1985-6; here he discusses how contemporary creation should exemplify the ideal of 'an encyclopaedia, as a method of knowledge, and above all as a network of connections between the events, the people and the things of the world'. Every event, experience, life and work of art is the result of an infinite network of relationships. The smallest occurrence can span out and multiply itself with infinite details so that there is no end, yet this small event is at the centre of it all (as in my work a single partial or a particular articulation).

[34] Six Memos for the Next Millennium/the Charles Eliot Norton Lectures 1985-86, Italo Calvino, Vintage (August 31, 1993), ·inISBN-10: 0679742379, ISBN-13: 978-0679742371

In this work I wanted to go into extreme detail about the discovery of some hidden particles, describing every single partial as a precious stone, its 'geological' history, its chemical composition, with acoustic references, together with the associations of images that it may evoke. This obsession to the microscopic evolution of the details usually leads me to create works with a strongly developed formal structure and structural development. Here my work tries to give life to a music narrative inspired by the universe represented by Dark Matter (*Materia Nigra*) by encompassing every detail, keeping an original approach without being lost in purely acoustic schemes and theorems.

Like all my other compositions, this work can be read on many different levels because of the sheer magnitude resulting in a polyphonic style of writing in which multiple narratives are densely layered. In my opinion, multiplicity means to represent many things while attempting to encompass the totality of an artistic work by expressing its more or less manifest complexity. This composition is a 'work in movement' and consists of continuously developing materials with overlapping sections (the resonance chambers 1, 2, 3, 4, 5, 6) (Fig 14). Independently developing lines are superimposed on top of each other to create coalescent layers: each layer can be taken to have a meaning unto itself or as a whole to create a larger level of meaning.

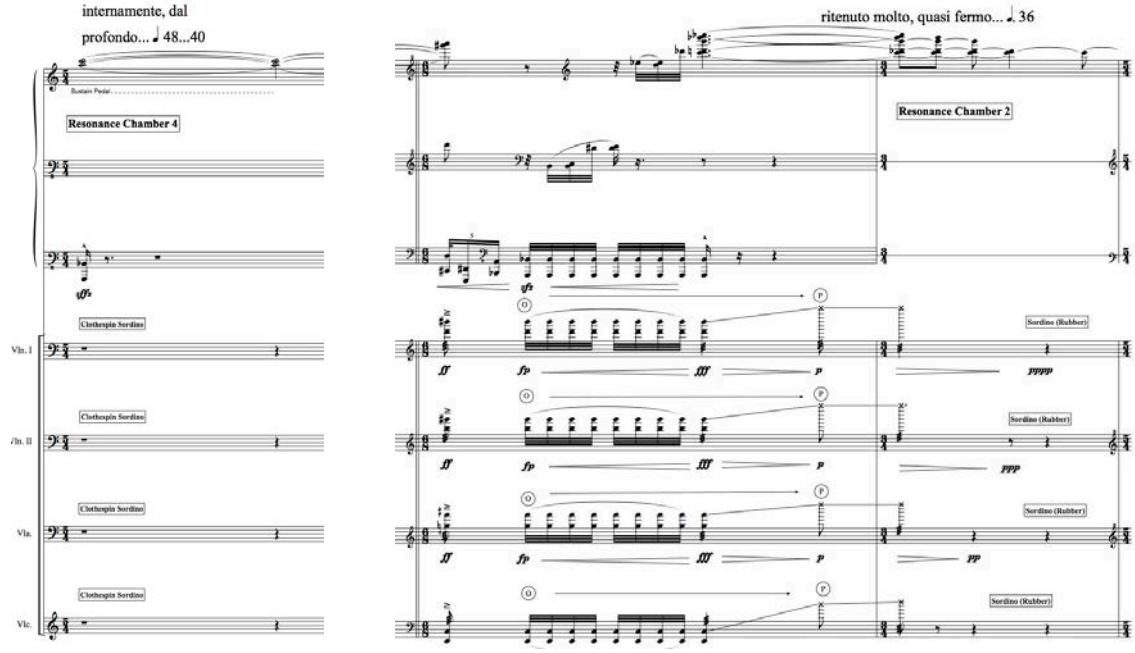

Fig 14: Resonance chamber 4 and 2 in *De Materia Nigra et Obscura*

Undoubtedly it is my work in the electronic studio that led me to experimentation with combining polyphonic layers of sound this is the reason why *De Materia Nigra et Obscura* features very dense polyphonic writing that can be interpreted as individual layers to finally aggregate in a complex framework (Fig 15). On top of all this material, accented notes 'pop out', outlining pitches that recall the original spectra.

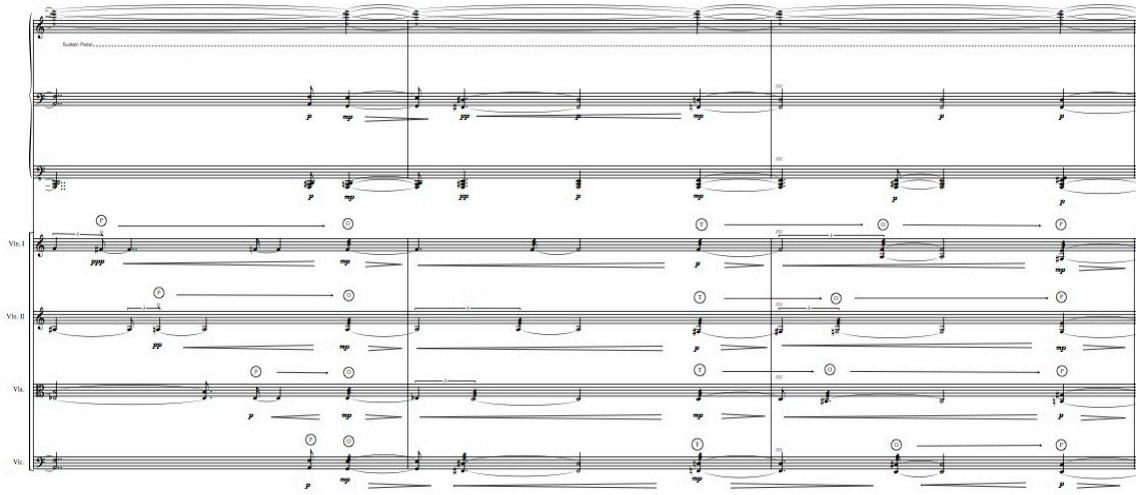

Fig 15: Combining polyphonic layers of sound in *De Materia Nigra et Obscura*

With this new, slower moving layer reminiscent of all the partials, the resulting music takes on a new level of meaning. One reasons is that the polyphonic development is now the background to a frozen superimposed hidden melody floating above it. According to my studies in cognitive music I am convinced that in the midst of all this evolutionary 'chaos', one's mind tends to think back to familiar things (the polarized partials, the spectrum, the virtual fundamental[35]) for security and support, or to get a sense of where one has come from. The constant recurrence of the fragmented melody plays into this idea of multiplicity, while every section incorporates the developments and discoveries of the previous sections. In *De Materia Nigra et Obscura* every time the spectrum is re-heard, whether as a full statement or as single fragments, it is perceived in a new way.

[35] 'Why you hear what you hear', E.J. Heller, Princeton University Press, 2012 USA

Constantly incorporating material from previous sections, I change the appearance of the initial spectrum which is perceived as completely changed by the poetical and structural journey, incorporating important features of the previous sections (section K bar 124).

The piece uses contrapuntal techniques (for example imitation between melodic ideas, often reduced to single note impulses, but also small canons between dynamics and timbres that reflect one into the other in varied forms), explores various melodic and rhythmic phrase structures, and displays different textures. My fundamental question is how music can have a meaning? Certainly music does not have the same universal grammar and semiology of a spoken language where people who speak the same idiom can understand one another. I believe notes are simply symbols and I am constantly warning myself about the dangers of getting lost in the pre-composition process becoming too idealistic. To avoid this I bound myself to the perceptive reality, remembering myself that the final purpose is to listen to and than eventually to react to. The process of creating, listening and reacting is a unique journey where 'the traveller lives a process of growth and mutation that is completely finished only after the last note has been played and memory has fully erased its last echo'.[36]

[36] From a personal conversation with D. Alberman, soloist and ex Arditti Quartet second violin and LSO principal

5. Mens Agitat Molem

I see this piece of music as a plot of relationships, constantly giving and taking, similar to a living and breathing organism than an object to be taken apart and dispassionately observed. The idea of *Mens Agitat Molem*[37] is connected to the concept of opening, stretching, disassembling and expanding what has various degrees of density (Table 3) while at the same time supports the idea of condensing and compacting what is more lightly granulated and dispersed.

Harmony	Melody	Rhythm	Timbre	Dynamic	From no density to high density
Min/Maj 3rd	Up/down unison and octave	3:2	Normal	mp	Level basic
Min/Maj 6th	Up/down 3rd and 6th	6:4	No vibrato	mf	Level basic
Aug 5th	Up/down 5th and 4th	5:4	Harmonics	f/p	Level medium
Aug 5th + maj 7th	Up/down Maj or min 7th	10:8	More harmonics	ff/pp	Level high
Aug 5th + flat 9th	Up/down Maj or min 9th	12:8	More harmonics	fff/ppp	Level high
Aug 5th + aug 9th	Up/down Maj or min 2nd	13:8	More harmonics	ffff/pppp	Level high
Minor 2nd Plus Aug 5th	Asc. and desc. intervals with resolution	7:8	More noise	sf	Level very high
Minor 2nd Plus Aug 5th+ maj 7th	Asc. and desc. intervals intervals with no resolution	9:8	More dis-harmonics	sfz	Level very high
Minor 2nd Plus Aug 5th + aug 9th	Asc. and desc. intervals with acciaccaturas	11:8	More multiphonics	sffz	Level very high

Table 3: Different degrees of density in *Mens Agitat Molem*

[37] *'The mind moves matter'* – Virgil, Aeneid, book 6, line 72

The process of a constantly expanding mind inside the brain, recently returned *en vogue* thanks to the neuroscientists[38], is here connected to the Virgil quote where *Mens* is for minds what *molem* is for brain. The process is clearly visible in the first section of the work (bar 1 to 60), in which a delicate *hoquetus*[39] between winds and strings intertwines sound and silence, the stable and unstable while hinting at new balance, towards a mobile equilibrium suspended in stasis (bar 60).

This work is the materialization of a poetical question about the perception and assimilation of an initially stable musical element (C spectrum) which is agitated and becomes unstable, opening new perspectives and placing everything into question; in so doing the process disperses any initial certainty in order to re-orient it and produce a final transformation of the original musical idea into something completely new, lighter, almost intangible. The process of agitation mainly involves the following elements and their transformation:

1. Presence of small acciaccaturas when single rhythmic events both in the winds and strings begin to appear or disappear (bar 1 and following) (Fig 16.)

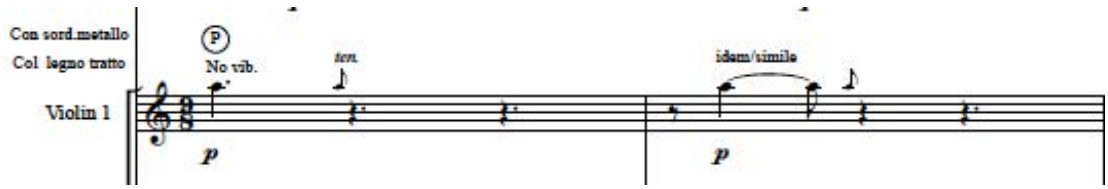

Fig 16: Small *acciaccature* in the strings *Mens Agitat Molem*

[38] Neuroscientist Mario Beauregard has recently published an excellent paper in the journal, *Progress in Neurobiology*. This paper, titled, "Mind does really matter: Evidence from neuroimaging studies of emotional self-regulation, psychotherapy, and placebo effect" presents findings from a wide variety of studies that all support the same thesis: mind is distinct from the brain, and mind has a causal power over the brain allowing it expand and improve.

[39] Hocket: (in medieval music) an interruption of a voice-part (usually of two or more parts alternately) by rests, so as to produce a broken or spasmodic effect; used as a contrapuntal device. Oxford English Dictionary.

2. Differentiation in tone colour between harmonically rich sounds performed by the strings at the bridge, with many partials and transients, opposite to the relatively muffled sounds with mutes, on the fingerboard (bar 1 and changing bow techniques in bar 6 and 21).

3. Increase and decrease in the presence of the vibrato rate in the brass section (bar 3 and following) (Fig 17).

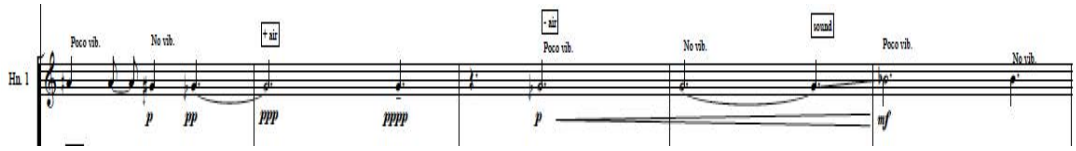

Fig 17: Vibrato and air presence variation in the strings in *Mens Agitat Molem*

4. Transformation in the percussions; timbre with movement from the centre to the edge or use of particular mallets, bows and the hands (from bar 3) (Fig 18).

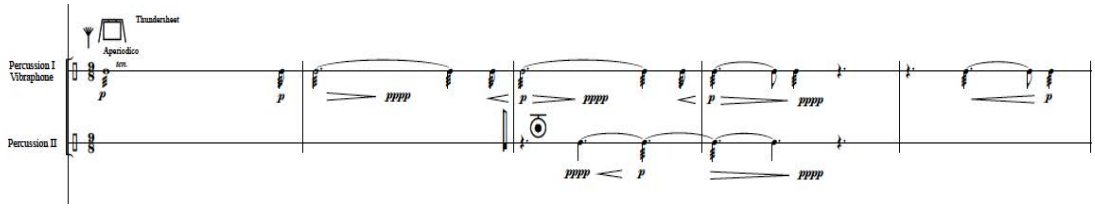

Fig 18: Percussion transformations in the percussion part in *Mens Agitat Molem*

5. Transformation in timbre with the passage from sounds with air to pure sounds and back (from bar 1) keeping a stable dynamic and a steady pulse gives the diverse layers almost imperceptible, delicate and volatile characteristic capable of

creating a process I have named 'musical chiaroscuro'[40]. This approach places nuances and details now in the foreground and now in the background (like detailed indication on articulation or transformation of a single note during its value for example from tenuto to flatter tongue or *flautando* to *tremolato*).

I believe every time we destabilize a previously assimilated order (for example the idea of melody as a sequence of pitches flowing with more or less predictable articulations and interval spans) we face a challenging and creative technical question, as our new statement points to a new order. In *Mens Agitat Molem* the destabilizing process, intended as to shake or to move something *(Agitare: Agito, agitas, agitat, agitare*), has primarily involved the melodic and timbre domain fragmenting and revitalizing the horizontal line (more explicit for example in the flute part from bar 63) and pulverizing the outcome in a vertical harmonic spectral re-appropriation of the sonic space.

I believe that the purpose of every morphological investigation is to describe the constants within a structure that, by consolidating into references, unfolds and becomes order and hierarchy. Composing this work has been for me about building relationships, shaking the musical organic components, letting new creative 'bubbles' reach the surface of my consciousness and presenting them to a hypothetical listener. At the root of the practice stands the study of the internal structure of every single aspect of a musical idea: its parameters and how they interact, sound and its movement in time constantly defining and being redefined by the perception of the listener.

[40] This is an Italian term which literally means 'light-dark'. In paintings the description refers to clear tonal contrasts which are often used to suggest the volume and modelling of the subjects depicted. Artists who are famed for the use of chiaroscuro include Leonardo da Vinci and Caravaggio. Leonardo employed it to give a vivid impression of the three-dimensionality of his figures, while Caravaggio used such contrasts for the sake of drama. Both artists were also aware of the emotional impact of these effects. http://www.nationalgallery.org.uk/paintings/glossary/chiaroscuro.

Understanding, relating to a form, an organism, or a body, must initially begin with receptivity to the act of listening, both to the other and to oneself. Listening demands the virtually impossible: silence. Silence requires breath, breath needs space, air and time. The reason why this old and delicate procedure is nowadays often not even considered essential is because there is the danger of having lost the capability of listening and looking inward. The reason why most of the works in this portfolio have, as initial indication about the pulse, words such as *...dall'interno, dal profondo...* is motivated by the need to asking the performer, and listener, to expand the act of listening steadily as it explores and somehow conquers the music matter.

The tensions created by the ascending and descending *portamento* and *glissando* (Fig 19) stretch the melodic texture of the layers, both horizontally and vertically, and introduce new categories of harmonic friction that carve a form emerging in relief over the previous layout (musical chiaroscuro). This unique procedure creates a new density in the agitated matter that present itself as a primordial floating substance.

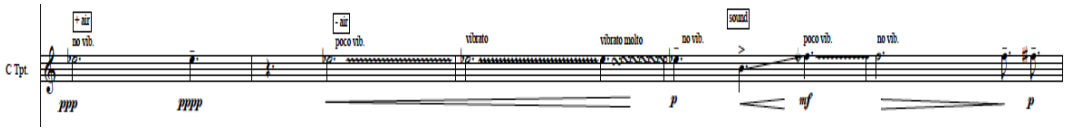

Fig 19: Upward glissando with vibrato changes and microtonal tuning in *Mens Agitat Molem*

I usually illustrate this expansion as a progression of superimposed arches, from the shortest to the longest, from the initial to the final ones. These arches are gathered in different levels of tension and release, following a precise dialectic in which we have a

proposal (the initial seed beginning in bar 1) developed in different ways (in the winds from bar 23), accumulating tension in different types of suspensions (bar 59 and 60 or bar 86 and 87) and cyclically ending in more or less definitive conclusions (bar 99 or bar 126 to 129). I must stress that in reality this apparently linear process takes place simultaneously on the different levels of the composition.

In section B the initial proposal is followed by a conclusion (bar 1 and 2): it is a suspension that presents a variation of the initial element (the melodic ascending leap of bar 63). The second arch (bar 66) begins with a varied proposal and a conclusion with varied faster elements consisting in faster leaps and more intense descending phrases (bar 72 and 73). Finally I let the work emerge in a more compact (bar 94 and 95), and then in a more ethereal way (bar 106 and 107).

'Listening' is capable of containing the single sound or the entire composition; it is the natural development of what Nono called the 'living with searching ears'[41]. Unconscious hearing becomes conscious listening.

The initial melodic leap, that characterized the whole first section, reaches the first break before the B section in a long A_5 sharp drone tenuto by the trumpet in the upper register (bar 51) and 'kept alive' by the friction with the B_5 of the flute (bar 53) and the presence of dynamic *crescendo* and *vibrato*/*no vibrato* contrast, identifying two of the very first 'polarized pitches' of the work.

Forty bars later (bar 91 and following) the very same element, that has been resonating internally and externally thanks to strength of the spectrum, comes back engraving a dramatic and lyrical line in which a thick internal counterpoint leads to a major conclusion in a moment of tension (fermata) (end of bar 95).

[41] The quote was referred by Alvise Vidolin, former Electronic Engenner of L.Nono to myself during his lessons I followed at Academia Benvenuti in Conegliano

In *Mens Agitat Molem,* composition becomes act of making choices and it must always be absolutely precise, in the way it indicates the essential characteristics that, from one passage to the next, from the first draft to the final score, will represent the concrete material of the work. In my opinion the type of notation I developed along the last three years has become increasingly simple(r) and as neutral as possible; very 'player-friendly'. I believe notation should contain the maximum amount of information with the minimum number of signs and be closely related and in proximity to the momentum in which it should be deployed.

In *Mens Agitat Molem* the structure emerges as a relationship of coordination and interdependence in which the individual elements are organized in and as a whole. Structure governs the order of succession, layers of aggregations, the levels of musical information produced and provided so as to ensure precise defined characteristics.

Anyway, variation structure, like the one evidently used in the *Mens Agitat Molem*, by regulating its variability according to precise parameters, never compromises its true identity. I have been claiming from the beginning of this portfolio that my works raise from a precise study of the act of perception. If the listener finds his own way in the score and enjoys it we have the effective proof that a pre-compositional study of the possible choices has served to properly design the composition. Every time I begin assembling and creating material and form I progressively grow aware that structure has no value in and of itself because it cannot exists alone. Structure is crucial, but not sufficient to generate the quality of what I aspire to produce and come as a direct consequence from the matter I decide to use and to shape. The form is the realization of a calibrated dynamic equilibrium among the structure, the life flow of the single components and the time, which takes solidity in the work.

In *Mens Agitat Molem* we find a perfect example of how I relate to form as an internal act of respectful, sacred ritual. Over the past three years, I have been trying to merge three aspects in a single unified attitude towards the art of composing:

1. I constantly refer back to the importance of a self-analytical insight during the act of inner listening and a careful attention to the morphological and topological value of every element and idea.
2. I support the possibility of generating poetical sense synthesized by a precise structure, while the conscious assembling of predefined categorized elements underpins my innate trust in the potential of a careful abandon to the inner force of every vibrating body.
3. I write to interact and relate, resonate and reverberate, possibly even re-define and re-invent every sound and my presence before it.

6. De Materia Subtilis et Complexa

The idea for a work inspired by the musical movement called *Ars subtilior* came to me after reading about the notation complexities and practical difficulties of the *Ars Subtilior*[44] (the musical movement that started within the 'late *Ars Nova'* during the renaissance in France, Italy and than all over Europe). I realized that this interest had driven me to discover some interesting similarities between my work and the investigations of the *The Modena Codex*[45]. The repertoire of the *Ars Subtilior* is cut off from the body of 'great music' by what Eggebrecht calls 'gaps in reception' and this directly reminded me of the existing distance between most art music of today and some audience's reaction to it.

In my cycle *De Materia* the title underlines a connection to an historical moment in which the artist and philosopher sought in every sign the reflection of another sympathetic and similar sign. In my opinion *subtilitas* seems to be equated wholesale with just the complexity of the music. Therefore an attempt to understand its meaning and its possible role in the musical discourse of today's contemporaneity seemed an excellent opportunity for an introspective journey into *De Materia*.

Traditionally the word *subtilitas* is closely related with the emphasis placed on mastery of craft therefore I cultivated at first the function of timbre to create a skilled

[44] Around 1370, several composers in Avignon and southern France moved away from the style of the *ars nova* motet to develop a highly refined and intricate style distinguished by extremely complex rhythmic notation. The new trend soon spread into northern Italy, northern Spain, and as far as Cyprus. In his *Tractatus cantus mensurabilis*, Philippus de Caserta, one of the composers of the ars nova period, described that later style as an *artem magis subtiliter*, or a 'more subtle art.' Musicologist Ursula Günther was the first, in 1950, to use the term *ars subtilior* to refer that complex musical style, which is the term widely used by musicologists today.

[45] The *Modena Codex (Modena, Biblioteca Estense, α.m.5,24)* (often referred to with the siglum Mod A) is an early fifteenth-century Italian manuscript of medieval music. The manuscript is one of the most important sources of the *ars subtilior* style of music. It is held in the Biblioteca Estense library in Modena. The Modena Codex contains multiple works from the composers Matteo da Perugia, Antonello da Caserta, Antonio Zachara da Teramo, Philippus de Caserta, Jaquemin de Senleches, Guillaume de Machaut, Bartolino da Padova, Bartolomeo da Bologna, Johannes Ciconia, Conradus de Pistoria, Egardus, Egidius, Johannes de Janua, Matheus de Sancto Johanne, and Andreas Servorum.

work. My research into the domain and colour of the multiphonics for wind instruments has been exactly this: a pre compositional journey into new timbre where a whole set of 'qualia'[46] (the phenomenal character of a perceptive experience and what it is like subjectively to undergo the experience) has been investigated and discovered in order to properly write this work.

The word *subtile* (Latin *subtilis*) means 'the skills and knowledge particular to a learned craft'. Vitruvius used various forms of *subtilis* often to mean thin, delicate but also as a positive judgment of refined artisanry. In my work *subtilis* becomes a value of fine craft, skills and technical mastery, prompting the question 'how is this produced, obtained? *Subtilis* in Medieval Latin always has to do with fine workmanship and design, especially demonstrated in multi-coloured, illusionistic effects[47]. These mentioned effects are compatible with the aesthetic of *trompe l'oeil* illusion, which places extended techniques for the piano and the winds at the poetical and structural core of the composition. In this work I try to suggest subtle as something intricate (complex) but delicate, a quality imparted not only to the notation of the music, but even more to the perceptive attitude of the performer and the listener. Even if subtle and complex are traditionally to be conceived as a property of the musical text, I tried to structurally and poetically correlate it to the sonic environment.

I need to ask how could I write in such a way the listener's perception could be allowed to adapt to silence?

[46] Wright, E. (2008). The case for qualia. Cambridge, MA: MIT Press.
[47] See the marbles of San Miniato al Monte, Florence Italy and the faux marbles of Abbey Church of Saint-Savin-sur-Gartempe, Poitou France.

The solution was to allow the music matter to grow extremely slowly, developing from noise into pink noise[48], and from a single pitch to an unstable dyad a minor second apart. I decided the metric and rhythmic interaction allowed shifts in the presentation of the single event; this procedure produces almost a 'Doppler effect'[49] in the listener (bar 1 to 24 and bar 28 to 49). In my work during the first minutes the listeners progressively get acquainted to listening carefully and hearing changes in the resonances and reverberation of the notes E and F. Some progressively louder accents *sforzando* open up the sonic landscape; the first of these slowly allows timbre to transform into harmony, turning a vertical aggregation of notes into a single complex amalgam (bar 50). After the first two sections the multiphonics kick in, all the produced sounds are based on the note E but with different upper partials; the different pitch-types have been all selected after research using three main software (conTimbre -Fig 20[50], Spear[51] and Adobe Audition-Fig 21/Fig 22[52]).

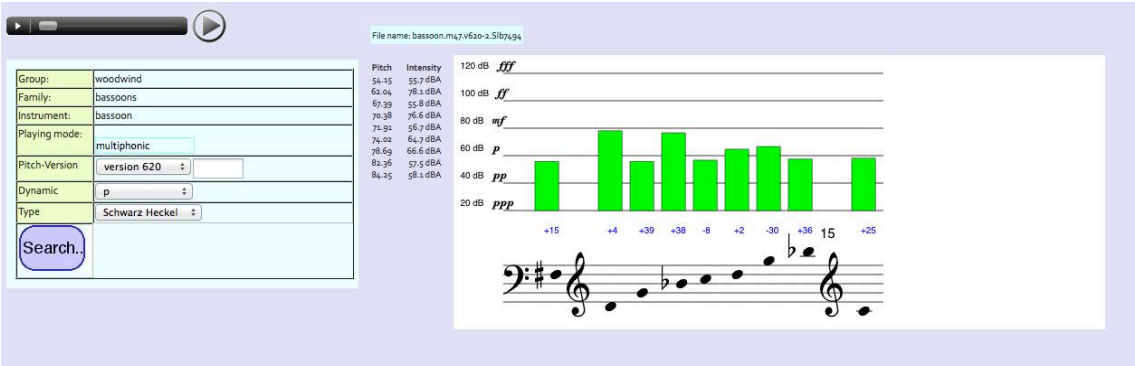

Fig 20: Selection and analysis - multiphonic for bassoon [nr. 620]

[48] Pink noise is a signal or process with a frequency spectrum such that the power spectral density is inversely proportional to the frequency of the signal. In pink noise, each octave carries an equal amount of noise power. The name arises from the pink appearance of visible light with this power spectrum.
[49] A change in the observed frequency of a wave, as of sound or light, occurring when the source and observer are in motion relative to each other, with the frequency increasing when the source and observer approach each other and decreasing when they move apart. The motion of the source causes a real shift in frequency of the wave, while the motion of the observer produces only an apparent shift in frequency. Also called Doppler shift.
[50] conTimbre is a new virtual orchestra with highly developed research tool for multiphonics and spectral analysis, www.contimbre.com
[51] SPEAR is a sinusoidal partial editing analysis and resynthesis software, www.klingbeil.com/spear/
[52] Adobe Audition is a digital audio workstation from Adobe Systems featuring both a multi-track, non-destructive mix/edit environment https://creative.adobe.com/products/audition

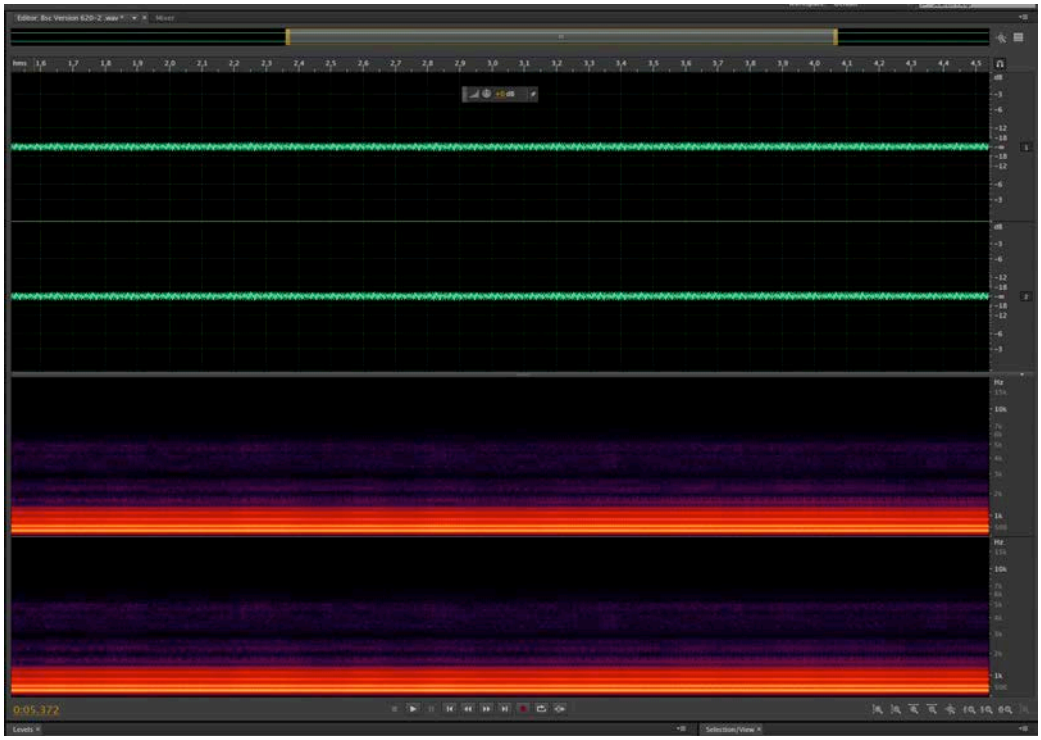

Fig 21: Editing and spectral analysis - multiphonic for bassoon

Fig 22: Analysis of the strength of the strongest partials multiphonic for bassoon

Thus I allow a hidden melody to progressively appear while the shades and lights of the foreground continue changing as behind a hidden silk curtain. For example in section C (bar 92) a real 'sound fog' is created, the ear perceives a distant melody slowly forming and coming clearer to the perception. When lately reaffirmed, during the flute and oboe cadenza section E (bar 102), the whole melodic fragment is somehow reassuring to the perception. The solo *cadenza*, presented by the flute later joined by the oboe, the tool through which I develop the melodic material carved out of the blocks of sound previously fragmented and pulverized in the multiphonic section. The complex *hocket* of section D (bar 92) cuts through the musical matter like a knife, and later obtains dignity of '*cantus'* developing over a thick drone performed by bass clarinet, horn and bassoon, all on the lower register (bar 114). All these sections echo one another slowly creating a process in which material from one section gets into another section and causes changes into the diverse matter's domains. The final section represents an act of sublimation in which the suspended chant, progressively defined through echoes, reverberations and resonances (bar 239) becomes explicit and able to come more clearly perceptible to finally disappear again in a sequence of multiphonics.

When rehearsing with ensemble Contrechamps, which commissioned the work, to let the musicians breathe, experience time stretching and stay loyal to the dynamics has been the most challenging aspect, demonstrating how even for highly skilled performers it is difficult to stay constantly consciously concentrated and in control.

I often explicitly trace the origins of some aspects of my compositional technique back to the rich oeuvre of madrigals and motets from the Cinquecento. I am inspired by the way the composers of this period obtained a sonic and semantic richness by activating all parameters (melody, rhythm, imitation, etc.). Through the development

of polyphony and the complexity of textual overlapping that was involved, effective possibilities arose to create links between words or syllables in addition to their linear declamation. In other words I believe the use of a polyphonic texture in every parameter of the musical writing, if based on the principal of imitation, may allow me to add a new dimension – both in the literal and figurative sense of the word – to the bi-dimensional (horizontal vertical) dimension of my writing. In my eyes, polyphony is an ideal medium for exploring and heightening the phonetic and semantic qualities of a musical idea (from a breath and single note to more complex forms of canons, imitation, and counterpoint) and for combining and recombining sounds, thereby making full use of every single and complex aspect of the musical world.

7. Anankè

I decided that to engage an audience each of the musicians of OENM, the Austrian ensemble who premiered my work *Anankè*, would be given a theatrical role during the performance. The percussionist was Anankè herself, and her three daughters were Klotho (the flutist), Lachesis (the clarinettist) and Atropos the (pianist) while the violinist and the cellist were the two brothers Hypnos and Thanatos. I took as my starting point the character of Anankè; she is the titan goddess from Greek mythology and personification of destiny, necessity and fate, depicted as holding a spindle. In old literature she marks the beginning of the cosmos, along with Chronos and I took inspiration from some evocations belonging to the old Greek theatre to stage the piece. As in a Greek Orphic ceremony the score begins with a procession, the musicians come walking in holding stones; they play a rhythmical cadenza with some rests to allow the percussion to throw a fisherman net on the floor.

The aim is to create a narrative before the actual music begins, while an initial rhythm is defined by the performers and the musicians' steps, the intertwining silence between sounds and rests and increases the tensions to prepare the stage performance. Anankè as a character gives significance to everything from the very first act; her fisherman net is the world's knot surrounding the universe, but also the web that keeps the gods and us inextricably interwoven to our unavoidable destiny. Placed in front of the piano a cotton thread symbolises our life, the pianist poses as 'never turning back' Atropos and has the task to cut the cotton with a pair of scissors when the final note of the work has been played (final measure of the work).

From the very beginning the musicians present a primordial rhythmic cell that pervades the whole work, varied but always present in all the diverse sections. The rhythmic cell is a declamation of the goddess name: A-NA-N-KÈ (Fig. 23).

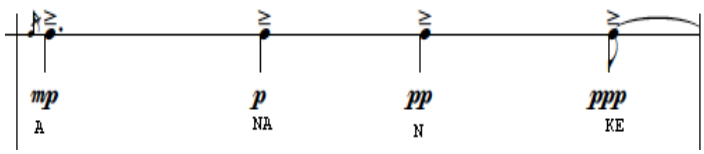

Fig. 23: Rhythmic cell built on the invocation of *Anankè*

The musicians, while coming into the hall, have their faces covered by a black veil to be discarded after the beginning of the work. The diverse patterns, played with white river stones produce a complex selection of timbres and accents (Section A and B bar 1 to 24) that directly influence and constitute the rhythmical material of the whole composition. The different spectra of the stones scratching one against the other were analysed and harmonized in the winds' multiphonics, while the use of the fishing line in the initial piano playing directly resembles the act of threading by the three Moirai[53] (bar 27, 28 and 29).

In this work I tried to alternate the cultivated enchanting beauty of a multi-layered chant for the traditional *Pierrot Lunaire* line-up, adding percussion and unpolished sounds and noises, whispers, screams and cries inspired by the mythological texts dealing with hints of pain and relief, pleasure and fear. The work *Anankè* deals with the idea that every human individual carries many different sharply separated identities, some of these even unknown to him/her. A creation of multifaceted timbres

[53] The Moirai (or Moirae) were the goddesses of fate who personified the inescapable destiny of man and is another name Klotho, Lachesis and Atropos

layered one over the other (bar 30 and 31) or in polyphonic textures (bar 73 and 74) becomes a portrait of our lives as a highly cultivated adventure artistically related to poems, epic verses and elegies. At the very same time sounds obtained playing knives (Fig. 24) and scissors (bar 214), scratching skins (Section M, bar 226) and frames, whistles tones wand whispered notes on flutes (bar 246), high harmonics and noisy grainy sounds produced *col legno* or near the bridge for the strings (bar 236 and following), and multiphonics for the flute and the clarinet (bar 378) personify the 'hidden' animal inside us with its survival instincts.

I planned to enlarge the opening up of music to noise, including an associated expansion and the incorporation of ideas of a theatrical space into the musical composition with an innovative sound interaction. In the writing I shaped the integration of sounds and noises into the configuration of trajectories, talks and acts of communication between the performers. The ensemble, even without conductor performed the work perfectly; constantly changing the leading role allowing it to became an additional theatrical element during the visual enjoyment of the piece while obviously producing additional tension. After a couple of performances in front of different audiences I realised this type of proposal could became an ideal medium for creating a full immersion musical experience[54].

[54] As full immersion here I intend a performance in which the audience is at some stage immersed and surrounded by the musicians.

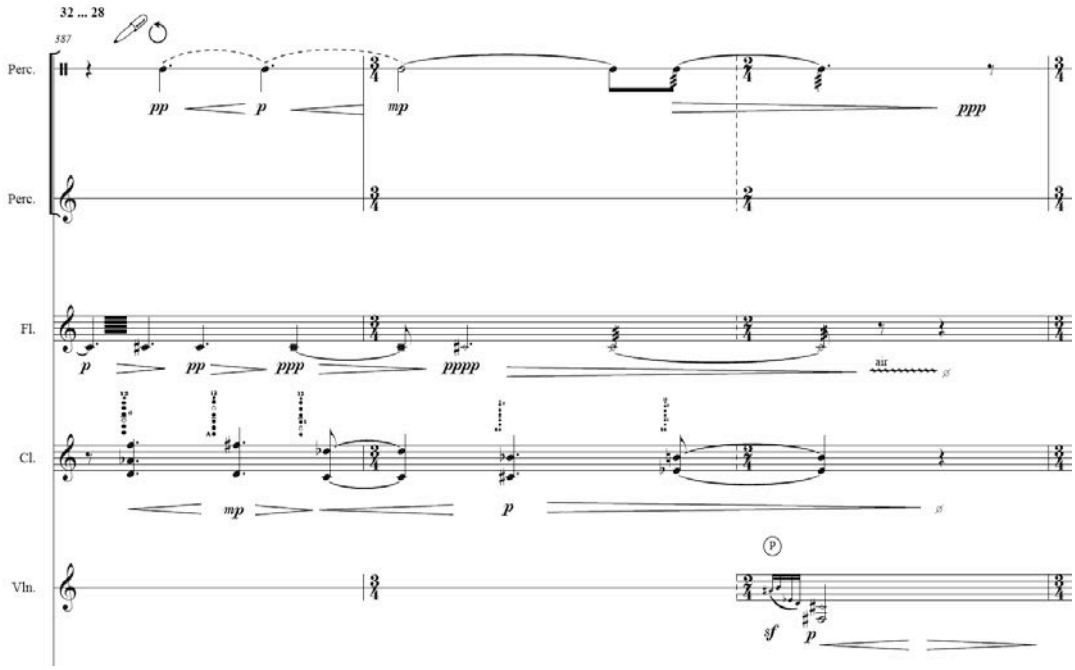

Fig. 24: Sound produced with knives, whispered and airy sounds, multiphonics and harmonics on scordatura in *Anankè*

Anankè is formed as a linear piece, yet has a multiple time frame during which some events recurs more or lees varied to finally flow into celebration; this becomes particularly evident in section R and in the cadenzas (bar 355 and 359). The chance of working on different layers (bar 387) is a process that allowed me to follow diverse, even contrasting, dramaturgical musical elements while displaying concomitant narrative structures. I claim that it is possible to directly influence and guide the listener's attention on a progressive journey, a story and a meaning. The way in which different audiences reacted to the work showed it is possible to describe how people relate to music across different emotional and mnemonic correlates of musical processing allowing a composer to work on his/her strategies. There is a relatively

broad consensus that musical experiences are often of an emotive kind[56] but I still believe the music experience is still primarily and mostly perceptive. Mindful of the difficulties in capturing the rich implicational meanings of the experience of musical emotion, during this work I have prioritized the pre-compositional analysis, and the use of music elements able to produce 'expressions' of emotion. I found of particular use the whole range of different articulations listed in the initial key note, while the direct impact on the emotional arousal of the listeners was intense in particular when I used musical and theatrical gestures with an audible sonic outcome, like sitting with a veil (bar 17), cutting through the cotton (bar 405) or crashing paper sheets (cello and violin part bar 1), shaking the web (bar 1 and following), struck the inside of the piano (Section T bar 399) or *battuto* with a pencil near the bridge (bar 198). I realized these measurable or quantifiable 'gestures' all include the physiological correlates of emotion: the expression of emotion, the associated movements and the gestural portrait of emotional feelings. I tried to transfer all these musical inputs and ideas in this work in a thick web of relations to different topological levels allowing each parameter to be directly influenced and react to the others. The direct consistency and interaction of all this processed creates unity and cements the idea of singularity in an apparently fragmented work able to sound massively compact and coherent at an attentive listening.

[56] Handbook of Music and Emotion: Theory, Research, Applications (Series in Affective Science) by Juslin (Editor), Sloboda (Editor), Oxford University Press, England 2009

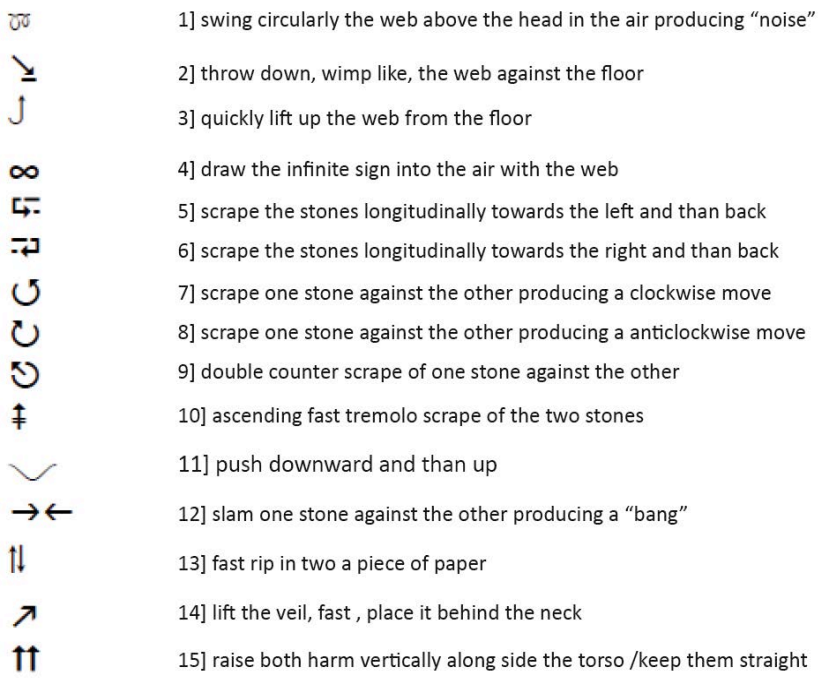

Fig. 25: The different articulations and gestures with web stones in *Anankè*

To positively develop and progress along this work I decided to work on a process I defined as ‘exemplify and reaffirm’: the compositional act firstly presents a simple musical element often fragmented and passed across different parameters and instruments as in section G (bar 107), then slowly these different aspects group and re-group until they create streams of similar morphological elements as in section J (bar 167). This approach follows my recent attention for the necessary introduction of the definition of musical qualia. The question behind this necessity is: why should we not be able to gauge the extent of similarity in listeners’ inner experiences to a piece of music by relying on the similarity with which these experiences are being expressed? What seemed impossible until now has been only a direct characterization of the inner experience, what is referred to as ‘quale’ in the philosophy of consciousness.

Qualia, the plural of quale, is a term used to refer to how people instinctively characterize the subjective conscious experiences as phenomenological feelings[57]. The scenario I propose raises also the possibility of a new musical language at the interface of science and musical poetry that is offered by declarative or propositional artistic and poetical statements and yet be amenable to scientific formalization and quantification[58]. Such a language does not currently exist, either generically or for the special case of musical 'qualia'[59] but I do believe it is strongly needed.

[57] *Philosophische Grundbegriffe*: *Vol. 2*. Munich, Germany: Beck. Ferber, R. (2003).
[58] About this kind of experience but in the field of dance see: DeLahunta, Clarke, Gill and Barnard, Phil (2012) A conversation about choreographic thinking tools. Journal of Dance & Somatic Practices, volume 3 (1-2): 243-259
[59] The singular of this word is quale, for a better understanding see Musical Qualia, Context, Time and Emotion by Gouen, J University of California, San Diego USA.

8. Salmodia

The work *Salmodia* is all about the use of microtonality and multiphonic enormous possibilities of the oboe ranging from double harmonics to very complex pitch combinations. The work has been dedicated and performed by Christopher Redgate, an amazing soloist and a dedicated researcher that has tried to expand and catalogue the possibilities of the oboe for many decades till the very last achievement of building a new quartitonal instrument called the Howarth- Redgate[60] oboe. *Salmodia*, or *Fragment IV* is part of the *Fragment series* which includes solo works for violin, viola, cello, piano, flute and clarinet and has seen this works all premiered by influential specialist of the instruments who have been trying to expand the boundaries of what is playable on the instrument and diffuse its avant-garde use (Alberman for the violin, Knox for the viola, De Saram for the cello, Redgate for the oboe and Rees for the flute who has developed the quartitonal Kingma System[61] for the flute). The purpose of my series has been to follow the path Berio drew with his *Sequenzas* a collection of virtuoso pieces that explores the capabilities of a solo instrument and its player, making extreme technical demands of the performer whilst developing the musical vocabulary of the instrument in compositions with the following features:

1) The idea of virtuosity is taken to the extreme. I use virtuosity to break down familiar technical restrictions, and develop new playing techniques, colours and sounds on the instrument, often involving almost impossible efforts from the performer. My concepts of virtuosity are a meaningful and integral part of the work rather than just an embellishment (bar 78 to 86).

[60] http://www.21stcenturyoboe.com/Howarth-Redgate-Oboe.php
[61] http://www.altoflute.co.uk/

2) The didactic aspect that focuses on a specific technical aspect lying at the core of the whole work. The purpose is to allow a composition, with lyrical expressive power, to be also a study that could become part of the repertoire and remain functional for future students to understand and explore new technical uses of the instrument (bar 33, 37 and 41).

3) The poetical feature is centred on a precise inspiration and motivation. This feature may be narrative or stylistic, in my case it has been connected to my spiritual attitude (all the works are intended as 'meditation with the instrument') and to a new approach to the material. This work, as the other of the series, has a precise morphological aspect: they are composed by dissected and fragmented ideas, which are slowly reconstructed along the full display of the work to finally, produce extended melodies (section G).

Inspired by Berio's legacy my work is non-serial, atonal even if sometimes tonally centred with rhythm and pitch organized in layers and sequences.
In all the *Fragment series* I have been collaborating closely with the performer to understand his particular abilities and limitations of the instrument. The written page has been from the very beginning a draft book, then a notebook and finally a score, to be completely edited and considered finished only after the first performance. *Salmodia* is a work of music without much rest or breath, it asks for all of the performer's stamina and resources. Stimulated by a series of meetings with Redgate, and by my interest in the use of multiphonics and non tonal spectral harmonies, I decided to develop my work along two major lines: the expressive melodic unfolding of an intimately delicate psalm[62], that follow the rules of the old religious chant, and the insert into this lyrical

[62] The title is derived from the Greek translation, ψαλμοί *psalmoi*, meaning "instrumental music"

lines of multiphonics that would have opened perceptive windows and harmonics and melodic directions to the linear writing. As far as many psalms (bar 116 of the 150) have individual superscription (titles), ranging from lengthy comments to a single word I decided to start commenting on a D.

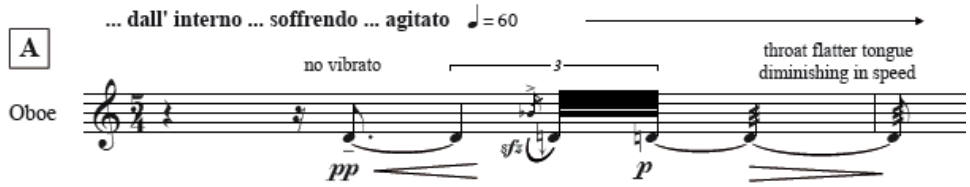

Fig. 26: Initial intonation in *Salmodia*

As the reciting[63] tone in the old Gregorian chant, the initial note D in bar 1 represents the centre around which the melody-type of this *Salmodia*. I use the word melody-type because in this, as all my other solo works, I explore and develop the idea of melodic formula, ranging length from a short motif of a few notes to an entire melody. My melody type spells out actual sequences of tones, just as they are to appear in a piece, as well as particular beginnings and endings, ornaments (like the recurring acciaccaturas appearing all through the piece) and other details (like the ending of the notes with complex articulations and timber definitions).

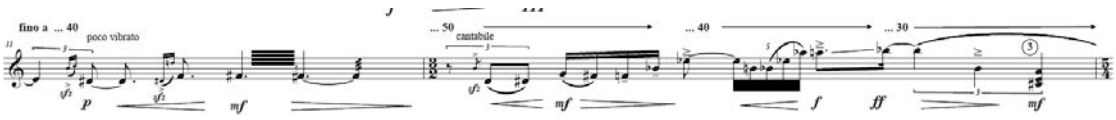

Fig. 27: Recurring acciaccaturas with *sforzando* and accents in *Salmodia*

[63] In chant a reciting tone (also called a recitation tone) is a repeated musical pitch around which the other pitches of the chant gravitate, or by extension, the entire melodic formula that centres on one or two such pitches.

The work presents more tones introducing lower the leading note (C sharp) and upper supertonic E always presenting some form of microtonal variation. The microtonal variations are always intended as melisma (melodic embellishment) or, as I prefer to indicate it, as a device to keep the note interesting, stable and yet constantly changing and transforming frequency into a timbre and vice versa.

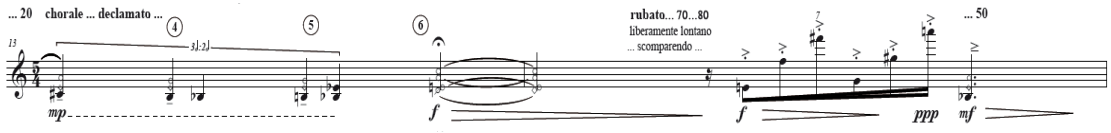

Fig 28: Expansion over octaves of the initial semitone in *Salmodia*

The following process lies in expanding and exploding the interval of a semitone between the D and the C sharp (bar 14) reaching A, the dominant of D, and therefore producing an increase in tension. The multiphonics emerge from bar 13.

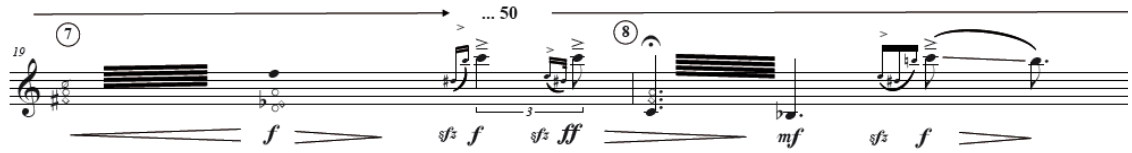

Fig 29: Multiphonic notation according to C. Redgate in *Salmodia*

The multiphonics notation used in *Salmodia,* and displayed in the previous picture, was developed by Paul Archbold and Christopher Redgate[64]:

- diamond note head either hollow, filled in or with a line through it, represents a fundamental fingering,

[64] An article in pdf form giving full details of the notation system can be found at http://21stcenturyoboe.com/Multiphonics.php

- standard note heads, either filled in or hollow represent specific keys,
- note head with a line through it represents a half hole fingering.

In multiphonic playing there is a very wide range of pitch combinations and a rich pallet of timbres. Particular compositional skill is required in order to use them well as they can easily turn into little more than circus tricks, but a creative imagination, fuelled by a study of the acoustic features of the material can lead to some exceptional music being written. Using this beautiful sound world the potential for creative composition increases and even now offers a great deal of territory which has been little explored. Multiphonics are used in groups, linked with single sounds, and used as a harmonic basis for a work. One of my aims was to prove the idea that oboe's multiphonics are not always necessarily loud, raucous and demanding on the ear. In *Salmodia* I often try to equally create very subtle textures, exciting and very beautiful quiet passages, as used in the last section of Berio's Sequenza VII.

In *Salmodia*, while the upward expansion of the pitch range progressively reaches the upper D_5 melodies begin to consistently appear as in the following example.

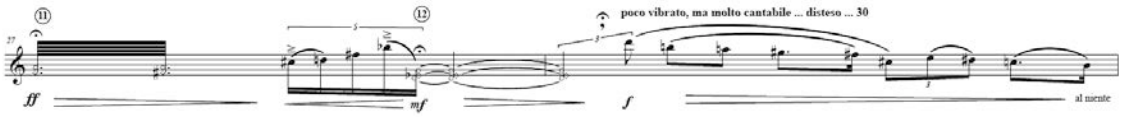

Fig. 30: Upward expansion and melodic outreach in *Salmodia*

In section D (bar the 31 to 51) the reciting D is reaffirmed and fully explored, in section E a middle cadenza is presented until bar 71. In bar 72 a melodic variation is

presented around the super dominant note B and its leading tone and super tonic. The section F presents a second cadenza this time on the note B. The virtuoso cadenza of this section shifts the tonal centre towards the note which become the dominant of the also large melodic interlude, section G which ends on a E in the altissimo register.

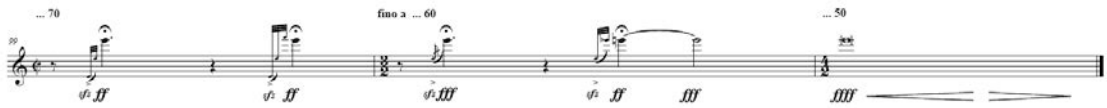

Fig. 31: Final ending in the altissimo register in *Salmodia*

Conclusion

To be a composer means for me to be at the centre of many doubts and uncertainties and my work is an individual answer to these ‘moments of unbalance’. The compositions in this portfolio are just a snapshot, a temporary portrait, and an uncharted route into these emotional territories.

When I arrived in UK and when after some years began this Ph.D. I realised that I was coming in touch with a sound conception and a sound culture different from my native one, which was already strongly defined and fully active. I decided this experience should become an occasion and a way of knowledge; I did not know at the time, where the way would have lead me.

After three years my whole work is more than ever strongly rooted in my original approach and background, but with an even deeper awareness and determination. My whole musical world is definitely centred on a single word: sound. Sound for me is not an acoustic definition but incarnates a relationship; sound reveals a process and is defined by an open constellation of meanings that continue to change according to who is giving and interpreting them. In dealing with sound I followed a thought based on differences whose sense is organic, morphological, physiological and yet possesses a mechanical dimension, even if it cannot be completely explained or experienced within pre-set categories. Above all I believe it is necessary to think that something precious lies in everything touches and concerns us, something that, if authentic, should settle a revealing relationship with our inner being.

As it emerges from this commentary I reached the conclusion that it is necessary, at the beginning of my composing, to keep distance from the sound conception we already know. As traveller, to really discover new uncharted territories I need to embrace a new point of departure and than follow alternative perspectives and directions. To explore landscapes is necessary to create the space for a certain quality of silence, an emptiness where the sound waiting inside myself, can have time and place to manifest itself.

If my activity should circulate within its usual confortable and reassuring cultural limits, I will only endlessly reproduce them finally cancelling the reason for my artistic presence to exist. Orpheus never wanders in labyrinths; it is only the Minotaur, the monster born from an act of abomination that finds his home hidden but constantly killing young lives. If I am able to handle this delicate process and let sound have a possible place of true existence I may become a kind of 'watcher' of this possibility, a meta-instrument myself.

In any case a new sense of relationship, of contact with the material and the possibility of creating forms and gestures, will be renewed and rediscovered beyond the limits learned from the tradition.

Along the centuries the history of our sublime art has always teaching us that the secret task the tradition itself has been always entrusting every new generation has only a supreme and precious destiny: renaissance through regeneration.

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